

Citation:

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CHAMPAGNE TRAINING ON A BEER BUDGET

When confronted by rapidly escalating costs for End User Computing (EUC) training and support, the Gold Coast City Council (GCCC) - the local government authority for Australia's premier tourist destination - took a proactive stance by adopting a low-cost strategy. This strategy has now been in place for about six years and, as shown in this case study, is reaping rewards in terms of productivity increases and technology diffusion. After identifying an appropriate theoretical perspective for the study, this paper describes the EUC training approach taken at GCCC, and investigates its impact on the productivity of the 1500 person workforce. Both the trainees and the trainers were surveyed to evaluate fully this low-cost strategy. Related social issues of empowering the stakeholders are examined and recommendations are made to ensure that this approach will continue to provide champagne training on a beer budget.

The importance and pervasiveness of EUC has been well established in the IT research literature [6, 13, 16, 17, 21]. Henderson & Treacy [10, p.5] suggest that the growth in the end-user population can be understood by looking at models of diffusion of innovation in organizations. Robey and Zmud [19] also encourage the use of this and other theoretical models to study the organization of EUC. In their words, "the diffusion of innovation model argues that the spread of new technologies depends on their fit with work context, knowledge about the technology, technological infrastructure, and community beliefs about the technology" [19 p.15]. EUC training and support issues directly relate to this model, because of their role in enabling the innovation to be more easily fitted with the work context and in providing knowledge about the technology. The training and support strategy also has an impact on the community beliefs about the technology. The diffusion of innovation model predicts that an effective training and support strategy - the focus of this study - will facilitate the adoption of an innovation: in this case, EUC.

Based on this theory, organizations should consider a strategy which will improve the way end-user technologies fit with the work context. By ensuring that potential adopters have positive perceptions of the innovation and the opportunity to communicate, the diffusion of EUC will be more effective.

Robey and Zmud's research [19, p.24] also suggests that three attributes of an innovation are consistently associated with its likelihood of adoption:

- the innovation's advantages relative to available alternatives;
- the compatibility of an innovation with the adopter's values, past experiences and needs;
- the less complex an innovation relative to available alternatives.

Consideration of these attributes may be beneficial in formulating an EUC training strategy. Effective EUC training can demonstrate and communicate the advantages, increase the compatibility, and reduce the complexity, thereby facilitating the extent of adoption and the effectiveness of users of software packages and other end-user technologies.

McLean, et al. [13, p.82] note that "EUC has come to mean many things to many people....," so it is necessary to define its meaning in specific contexts. For the purposes of this study, EUC is

limited to the use of packaged software by Council staff. It includes Benjamin's [2, p.14] requirement for the user to be "... in direct interactive control of the computer session." The main software packages used by Council staff (WordPerfect, Lotus 1-2-3, Microsoft Access) are included in McLean's [13] top ten EUC activities. This study also evaluated Council's EUC training in the operating environments, MS-DOS and Windows.

As predicted by Benjamin [2] in 1982, the use of packaged software by office workers has grown enormously as end-user computing now pervades all operational and management areas of business. Effective training [15] and support are critical to ensure that these packages and other information technology (IT) are used to best advantage in adding value to the organization's products and services [4]. While the cost of effectively training a large number of employees in the use of IT is significant, ineffective training can be even more costly, so the question arises as to what is the most effective way of providing the necessary level of EUC training and support. Rockart & Flannery [20, p783] predicted that the Information Centre was only the first stage of end-user management, and that it would be followed by distributed support. They explain that end users plead for a local 'focal point' person to assist them with all their EUC problems. They urge the formal IT organization to recognize the contribution of functional support personnel, and use them to assist the IT organization in carrying out its strategic approach. Other researchers, for example Gerrity and Rockart [9], and Boynton, et al. [5] strongly advocate for distributing IT resources to the business environment.

This case study provided an opportunity to undertake an in-depth analysis of these issues in a natural setting.

THE SETTING

The Gold Coast is Australia's premier tourist destination, attracting 3 million visitors per year to its golden beaches and luxurious resorts. With an annual budget of \$290 million, the Gold Coast City Council employs 1500 staff members to provide a broad range of services to residents and visitors. Like many organizations, the GCCC has experienced a virtual explosion in end-user computing with the number of PCs growing from only 50 in 1987 to over 500 today. In addition, a Fujitsu mainframe provides corporate applications via a further 300 networked terminals, servicing all depots, libraries, workshops, offices, water and sewage treatment plants, quarries, and refuse tips.

The main elements of the strategy adopted by GCCC in 1989 to control the cost of EUC training and support were:

- use of non-IT staff (competent users) for both training and support of fellow users for packaged software;
- use of commercially available quality courseware;
- use of on-site training facilities.

Cotterman and Kumar [7] argue that the validity of EUC empirical studies could be jeopardized if the particular subset of the population of end users to which the research is addressed is not identified. Using their taxonomy of end users [7, p.1316], the Council staff who were the subject of this study would be classified as 'user-operators,' direct end users who actually run the particular software packages on a PC at their desks. It should be noted that other EUC activities are undertaken by Council staff but they are not the subject of this study.

[other EUC activities: writing and executing SQL ad-hoc queries and report generation from corporate relational databases, file transfers, users who write applications for other people to operate eg Access, Open Access, DBQ, package selection, implementation and operation eg ticketing system, tips and quarries, fuel system, caravan parks, GIS stuff].

THE STUDY

The opportunity arose to undertake an in-depth study of a purportedly cost-effective approach to the normally expensive problem of providing EUC training and support. With their low-cost strategy having been in operation for nearly six years, GCCC management considered that it was time to undertake an evaluation. The proposed study held considerable research interest as it provided an opportunity to analyse a site where competent users of software packages provide the novel combination of both training and support for their peers. Following discussion with GCCC management, it was decided that the research question should be whether instructor-led, in-house training by key users is an efficient and effective strategy for EUC training. It was agreed that the objective of the study was to evaluate the efficiency and effectiveness of GCCC's EUC training and support strategy. The scope of the study was restricted to all PC software package training which had been conducted during 1992 and 1993.

Following Benbasat et al. [3], the case study approach was deemed appropriate as the research seeks to answer 'how' and 'why' questions about EUC training and support in their natural and dynamic settings. The opportunity to undertake this illustrative study not only dictated a single-case design but also the site selection. The research design involved multiple sources of evidence to build a rich picture of GCCC's EUC training and support strategy. Sources included face-to-face interviews with all the trainers, a series of questionnaires administered to both trainers and trainees, and analysis of all relevant documentation including the 1988 report on GCCC's EUC, "Computer Training: Needs and Options", attendance records, evaluation forms, other reports, etc. The sample size for the administration of the questionnaires was 13 trainers and 186 trainees. These represented the entire population of trainers and trainees, still employed by GCCC, who were involved in the selected in-house courses during 1992 and 1993.

Table 1 shows the numbers of staff trained in-house in PC software package training courses during that period. Note that 88% of training was conducted by key users.

Table 1. Numbers of Trainees in EUC Training Courses: 1992-1993

Course Name	Numbers of Staff Trained By			Total Staff Trained
	Key User Trainers	IT Trainers	External Trainers	
WordPerfect Module 1	68			68
WordPerfect Module 2	58			58
Intro to DOS	79	36		115
WordPerfect Module 3	38			38
Lotus 123 Module 1	47	4		51
Lotus 123 Module 2	39			39
Intro to Windows	72	2	7	81
Microsoft Access	4		7	11
Totals	405	42	14	461
Percentages	88%	9%	3%	100%

The approach taken was to survey all trainees and trainers involved in the in-house courses during 1992 and 1993 and to follow the survey of all the trainers with in-depth interviews. In order to focus on productivity gains, it was decided to exclude training other than for specific software packages, as general computer topics would have required different treatment. The small number of courses conducted exclusively by external trainers on site were excluded from this survey in order to focus on the dominant strategy of key users conducting EUC software package training.

Two surveys - a survey of trainees and a survey of trainers - were designed by the researchers in conjunction with Council's Research Officer, the IT Business Support Manager, and the Training Manager. Most of the questions were six-point Likert-type scales. Question 5 from the trainees' general questionnaire typifies the design approach.

Q5. This section attempts to gauge your feelings about the benefits of Council's in-house training courses for software packages. Please indicate the extent to which you agree or disagree with the following statements. *(Please circle the number in one box only for each statement.)*

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Don't Know/ No Answer
(e) My job performance has improved as a result of the skills gained in the training course(s)	1	2	3	4	5	6

Trainee Survey

This survey was composed of the following questionnaires:

- a general questionnaire to gauge the opinions and feelings of trainees in relation to the in-house courses;
- separate questionnaires for each software package for which training is provided (distributed only to the attendees of each course type).

The goals of the general questionnaire were:

- to determine user profiles in terms of computer experience, age, sex, education;
- to measure the increase in productivity as a result of the training;
- to seek trainees' opinions and feelings re in-house training and supervisors' support.

The questionnaires specific to each software package asked about relevance of course content, productivity improvements, quality and efficiency of work output, and support from trainers.

The questionnaires were tested on a small sample of attendees prior to distributing them through the Council internal mail to all staff who had attended EUC in-house training for software packages during 1992 and 1993. In total 186 staff received survey forms. The respondent had the option of removing the covering memo to remain anonymous. After completion, the questionnaires were returned to the Business Support Manager and analysed by Council's Research Officer and the researchers. Almost 60% of questionnaires were returned.

Trainer Survey

A trainers' survey was designed, tested, and distributed to 13 trainers: ten key-user trainers and three IT trainers. The composition was similar to the trainee survey: a general questionnaire, and specific questionnaires for each software package. These questionnaires were collected by the researchers during interviews with each trainer. The purpose of these interviews was to enable the trainers to elaborate on their responses.

The goals of the trainer survey were:

- to identify areas for improvement in the training;
- to determine the extent of EUC support provided by the trainers.

Response Rates

The response rates of almost 60% for the trainees' survey and 100% for the trainers' survey provided a solid foundation for the analysis. The number of responses for each questionnaire are shown in Table 2.

Table 2. Survey Responses

Questionnaire	Trainee Responses	Trainer Responses
General	110	13
WordPerfect	45	6
Lotus	20	4
Windows	33	2

MS Access	7	1
Intro to DOS	22	4

EUC AT GCCC

In the first stage of this case study, multiple sources of evidence, including interviews of key personnel and searches of relevant documents, were used to gain an understanding of GCCC's EUC approach. GCCC's debut into EUC was heralded by the installation in 1982 of a network of Burroughs B20 microcomputers for word processing, spreadsheets, and limited engineering applications. This system complemented the Fujitsu mainframe which was used for rates, payroll, and other financial applications.

In 1986, the EUC Support Group, was formed within the IT Section. At this time GCCC also had 10 Fujitsu PCs which were similar to IBM XTs. As the Council had adopted EUC as part of its corporate strategy, to facilitate its implementation at GCCC, a consultant sponsored by Fujitsu (Aust) conducted a series of training sessions throughout the organization.

The End User Computing Management Group (EUCMG) representing all departments was formed in 1987 to formulate EUC policies, procedures and standards. This group met monthly to ensure that the EUC Support Group responded to the needs of all clients and that a corporate approach was taken in regard to hardware and software purchases, standards, and data integrity.

EUC Training Strategy

By 1988, the number of PCs had grown to 80 and training had become a major issue. In the absence of local training courses, staff travelled 80 kms (50 miles) to Brisbane to attend courses and seminars. This was not an equitable situation as some cost centres had more funds and more progressive managers than others. In addition, these courses were expensive and no controls were in place to assess their value or content. Therefore, the EUCMG called for a study to address options to satisfy all EUC training needs.

The Human Resource Development Officer prepared a report in consultation with the EUC Support Manager in November 1988. The increase in the microcomputer population from six in 1982 to 80 in 1988 had generated a demand for a variety of PC software courses. It was estimated that urgent courses required within the following year totalled 1227 training days. At the going rate of \$160 /day, this would cost Council \$200,000 per year in course fees alone, excluding vehicle and other travel costs.

Three options were evaluated: videotape presentations; computer-based training; and instructor-led training , both in-house and external.

Videotape presentations were considered unsuitable due to the lack of suitable training videotapes. Computer-based training was rejected on the basis of the high cost to develop packages, the lack of human interaction, relative inflexibility of feedback, and the possible intimidation of the computer-shy trainee. Some of the advantages claimed for instructor-led training are that it allows the trainee to learn from the questions and experiences of others in the group, provides diverse and appropriate feedback, and has the added benefit of personal contact. In-house courses were preferred to external courses as they provided the opportunity to maximize relevance of material to Council operations and to provide training at a lower cost. The possibility of acquiring commercially available courseware was mooted as a

solution to the problem of course development leadtimes and costs. The report also recognized that supporting newly trained users would impact on the already strained resources of the EUC Support Group.

Having established a preference for in-house instructor-led courses, a decision was required as to who would deliver the training and support. Again three options were evaluated:

- IT specialists;
- EUC Support Group staff;
- competent users of the software packages - in Gerrity and Rockart's terminology, "home-grown functional specialists" [9, p.33].

The third option, to train key users as trainers, was adopted. Reasons included lower cost; ability to adapt courses to the demands of the workplace; subsequent availability to provide 'just-in-time' support; and the problem that staff associated with the first two options were already overloaded.

Implementation of EUC Training Strategy

Through the EUCMG, competent users of each software package, in each functional area, were identified. These people were drawn from outside the IT section, had been with GCCC for some time, and were familiar with Council operations. All had demonstrated competence in the use of particular software packages, an ability to communicate in a training role, and an enthusiasm to take on additional responsibility. An external trainer was engaged to conduct on-site train-the-trainer courses for these key users.

A computer training room was established to accommodate six PCs. Establishment funds of \$45,000 provided the necessary hardware, software, courseware, furniture, and training equipment. A further \$5,000 was invested in train-the-trainer courses and other external software package courses for potential trainers.

The role of EUC Trainer at GCCC is rarely recognized formally in job descriptions. When trainers have transferred across sections and departments, they have retained their training role. No extra remuneration is provided for taking on these additional duties. They all seem to thrive on the challenge of training and report enormous personal satisfaction and development from the role. The following comments by two of the trainers are typical of the responses provided by trainers during face-to-face interviews:

"I thoroughly enjoy training. It forced me to study WordPerfect in detail. I have applied this knowledge to my work situation and this has then transferred to my classes. I frequently pass on new findings to the staff who come to me for support."

"The best thing about training is being able to impart knowledge and to feel that fellow workers can apply it and be more productive".

In establishing in-house EUC training, one of the goals was to use quality training materials. In the absence of a professional computer trainer to prepare such material, commercially available courseware was evaluated for each software package. The ComputerPrep courseware supplied by Drake International was rated highly in terms of quality and ease of use. This was chosen for every course for which ComputerPrep materials were available. The courseware included the instructor manual with transparency masters, exercise files on

computer disks, and student guides. Use of the courseware reduced lead-times for introducing new courses by eliminating time and effort by trainers or EUC Support Group staff to develop courses and obviating the need to have student guides copied. By using the standard courseware, all trainees covered the same material in each module and could be scheduled to attend subsequent modules knowing the content of prior courses. Interviews of the trainers revealed that they spent about 16 hours preparation prior to their first course, but then only two to three hours for subsequent courses. As one of the trainers enthused: “The Drake courseware is fantastic. I don’t have to worry about preparing student guides, transparencies or exercise files. The instructors guide is well presented, and I feel comfortable and relaxed about presenting a training session”. The trainees were able to record notes in their student guides for each software package and retain them as a reference. One trainee highlighted the usefulness of the material: “For functions which I use rarely, like mail merges, its great to have my own copy of the notes. I may not remember how to do it, but I know where to look it up.”

The EUC Support Group is an implementation of the Information Centre model. Using the framework provided by Huff, Munro and Martin [11, p.549], the strategy is controlled growth development: “wherein EUC is developed rapidly but in a carefully controlled environment”. Although tight control is maintained over acquisition of hardware and software, the EUC Support Group strives to promote a ‘nurturing’ attitude within Council. In the words of the EUC Support Manager: “Our aim is to treat them all with respect as individuals, and to recognise the importance of satisfying the business requirement. We provide take home PCs, link them with other users, organize user groups, lend books and equipment, and provide a non-threatening environment for training and support”. Table 3 applies the stages of growth model [11, p.548] to the EUC Support Group activities.

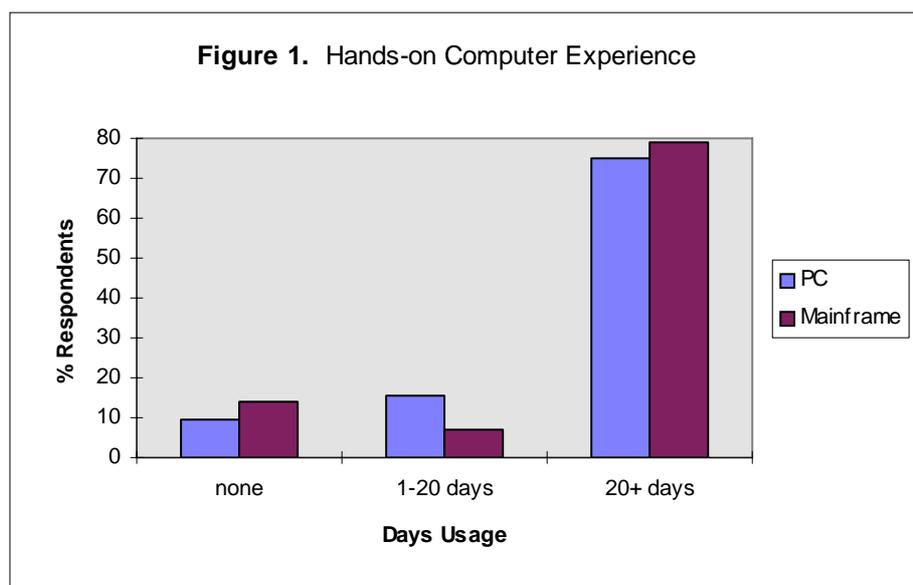
Table 3. Implementation Stages of GCCC's EUC

Year	Stage	Growth Processes	EUC Activities
1986	Stage 1	isolation	established EUC Support Group in IT Section
1987-88	Stage 2	stand-alone	established user groups, formalized equipment acquisition, modest internal training, building awareness, nonspecialized support
1989-1992	Stage 3	manual integration	corporate focus, proactive support, routine offering of advanced courses
1992-present	Stage 4	automated integration	focus on LANS, WANS, integrate PC and mainframe applications
future ?	Stage 5	distributed integration	implementation of distributed computing

FINDINGS

The survey responses were summarised for each question. From the six-point Likert scales, agree/disagree measures were aggregated with 'agree' being the sum of 'strongly agree' and 'agree' responses, and 'disagree' being the sum of 'disagree' and 'strongly disagree or disagree strongly'???

One of the problems consistently reported by trainers was the variation in keyboard skills and computer literacy in each group of trainees. The attendees were asked how much hands-on computer experience they had prior to attending courses, and the results, as shown in Figure 1, indicate two distinct groups, novices and experienced users. To date, prior experience has not been taken into account when allocating trainees to courses.



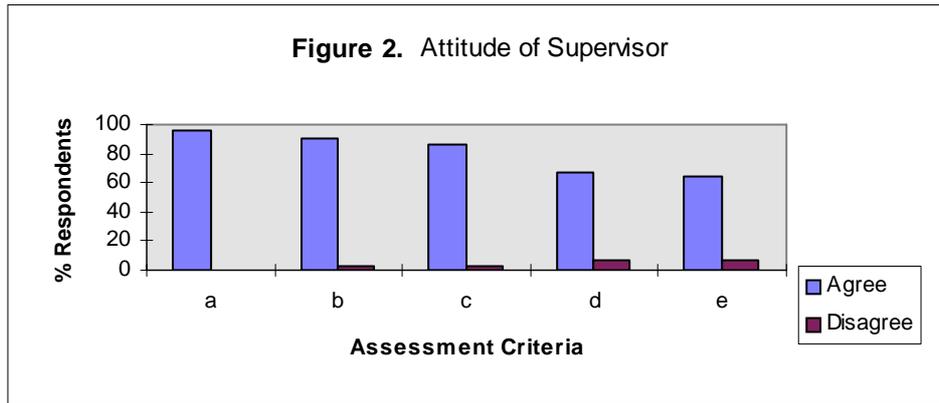
The penetration of PC technology at GCCC was evidenced by 80.6% of respondents recording being at least moderately dependent on PC software packages in carrying out their

work. GCCC has 500 PCs and 300 terminals. There are 475 white-collar workers and about 100 on contract. PC usage is gradually creeping into blue-collar areas, e.g., stores, treatment plants.

The research undertaken by Armstrong and McElhone [1, p.698] indicates that the key to implementing a successful computer education project is management support. Management must understand the process and accept these concepts:

- computer education requires concentration, an adequate schedule of uninterrupted training time;
- training is the beginning; practice completes the process;
- successful outcomes are directly related to motivation, and motivation is directly related to the degree of management support perceived by the students.

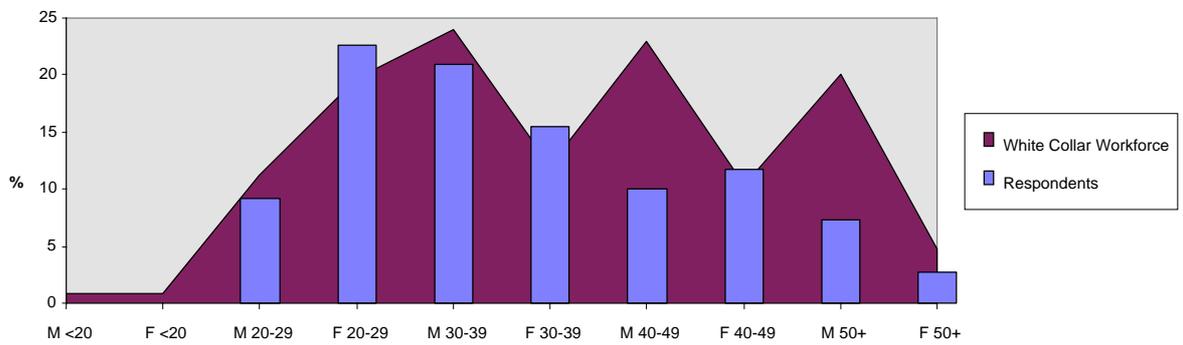
Relating this to the survey results, 87% of attendees agreed that it was beneficial to get away from their desks to concentrate on learning the package; 71.3% agreed that they felt more motivated to use PC software as a result of the course. Figure 2 indicates that the trainees perceive there is strong supervisor support for training and recognition of effort relating to learning and using PC software packages. (Note, that in Figure 2 and subsequent Figures, the Agree/Disagree measures have been aggregated from six-point Likert-type scales, with 'agree' being the sum of 'strongly agree' and 'agree' responses; and 'disagree' being the sum of 'disagree' and 'disagree strongly' responses.)



Legend			
a	Supported attendance	d	Recognizes effort to learn software
b	Understands effort to use PC software effectively	e	Recognizes effort to use software
c	Believes PCs improve productivity		

Figure 3 shows the rate of female respondents was marginally above the GCCC white collar population statistics. However the males were consistently below, especially in the older age groups (40 years and above). This age group represents male-dominated positions such as managers and professionals (engineers, health, and building inspectors). There could be a myriad of reasons why they don't attend computer training courses: they may not consider the key users to be sufficiently professional; they may fear embarrassment in the company of subordinate trainers or colleagues; perhaps they are self-taught or genuinely don't have the need to undertake this training; time restraints may preclude senior management from attending full day training courses. A thorough training needs analysis would reveal the true requirement, enabling training programs to be formulated for this group.

Figure 3. Comparison Respondent Demographics with GCCC White Collar Workforce

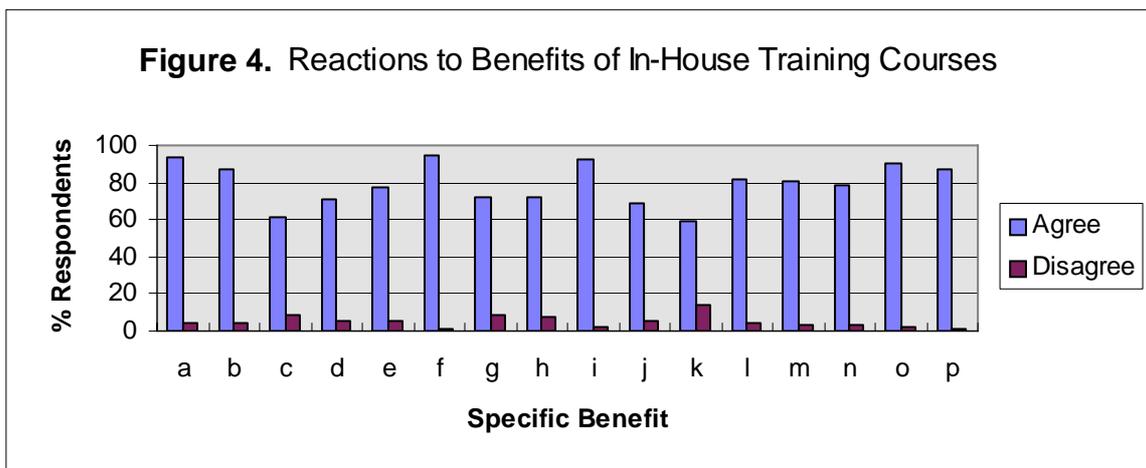


Benefits Confirmed

Respondents were asked to indicate on six-point Likert-type scales how they felt about a series of statements describing potential benefits of training courses in general, in-house training, and the support provided by the trainers. The relevance of the advantages of in-house training courses cited in the Training Needs Analysis report were confirmed by responses agreeing that the ability to ask work-specific questions during the course was beneficial. The comment of a word processor operator in the Community Services Department is typical of the responses received: “The training was caring and competent - cognisant of my level of understanding. It also assisted my application for a job re Council Agenda preparation.” There was strong support for the propositions that the courses improved confidence in using computers, job satisfaction, job performance, and motivation to use software packages. The social aspects of group training with colleagues were also endorsed.

From Council’s viewpoint, an encouraging result from the surveys is the very positive attitude to the in-house training courses. Figure 4 shows a comparison of ‘agree’ versus ‘disagree’ responses for the sixteen criteria evaluated.

Figure 4. Reactions to Benefits of In-House Training Courses



Assessment criteria to gauge opinions regarding quality and effectiveness of courses, support issues and social aspects of training:

Legend

a	Enabled quick mastery of concepts	i	Recommend to co-workers
b	Concentrate away from desk	j	Trainers aware of GCCC work
c	Improved job satisfaction	k	GCCC-specific queries answered
d	Increased motivation to use package	l	Interaction with other GCCC staff
e	Improved job performance	m	Meet other GCCC staff
f	Skilled trainers	n	Support from trainers
g	Enhanced computer awareness	o	Local venue convenient
h	Improved computer confidence	p	Cost effective

Software Specific

The results of the evaluation of training for each of the specific software packages are summarized in Figures 5.1 to 5.5

These questionnaires addressed productivity improvements for each package, rather than just broad feedback about training in general, to determine whether the specific courses improved quality of output, speed of operation, etc. All were very positive in relation to content, productivity, quality, speed, and course notes. A few were uncertain about support from trainers, maybe because almost all trainers are located at the Administration Centre in Bundall, not out in depots, treatment plants, etc which can be up to 15 kms away. Only one trainer is stationed outside the main Administration Centre. A solution may be for GCCC to recruit more trainers from the 'remote' depots, libraries, treatment plants, and offices.

Legend

a	Course content relevant	e	Course notes useful as reference
b	Improved productivity	f	Convenient support from trainers
c	Improved quality of output	g	Valuable assistance from trainers
d	Improved throughput		

Figure 5.1 Effectiveness of WordPerfect Training and Support

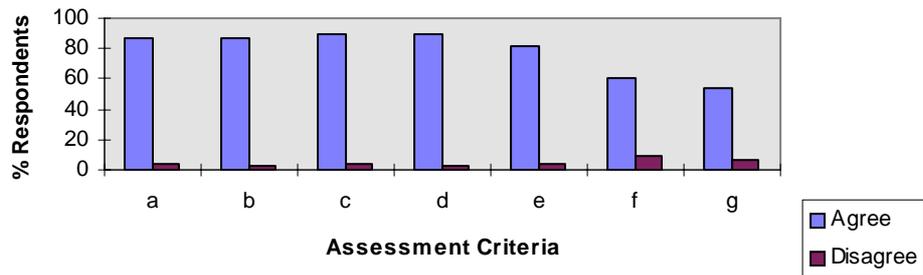


Figure 5.2 Effectiveness of Lotus 123 Training and Support

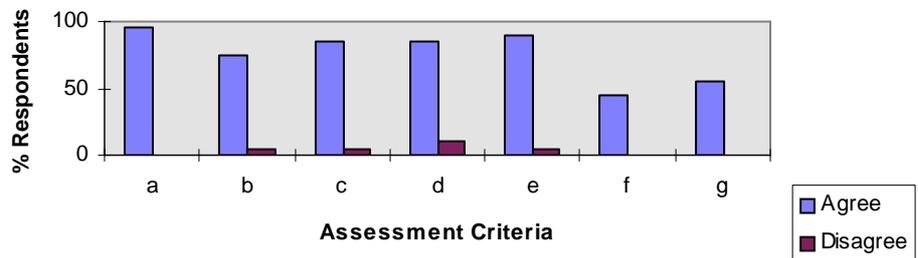
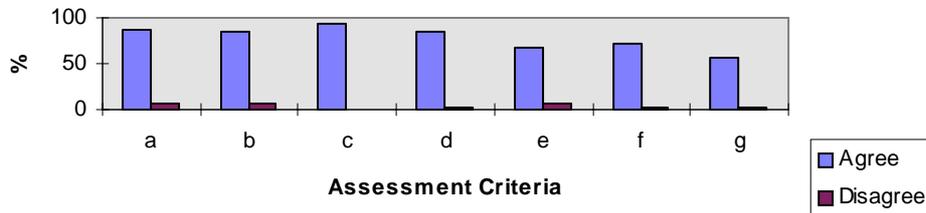
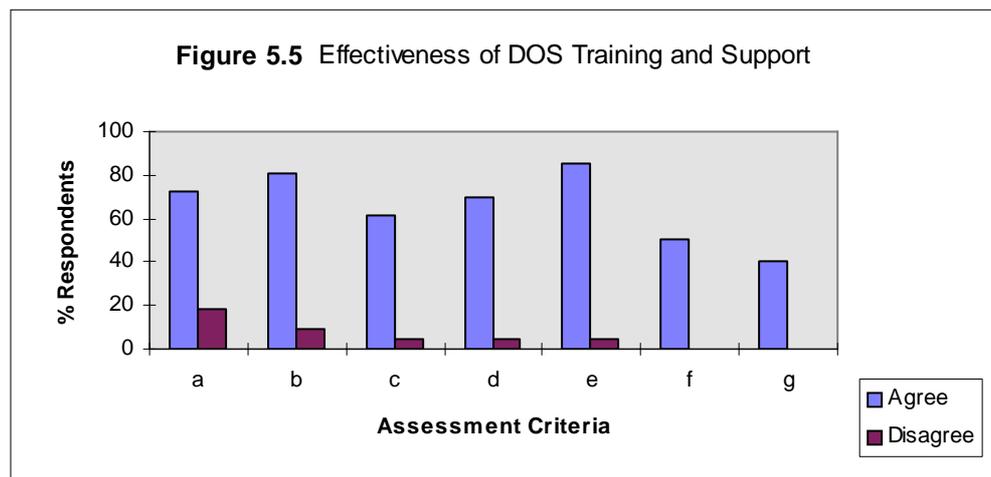
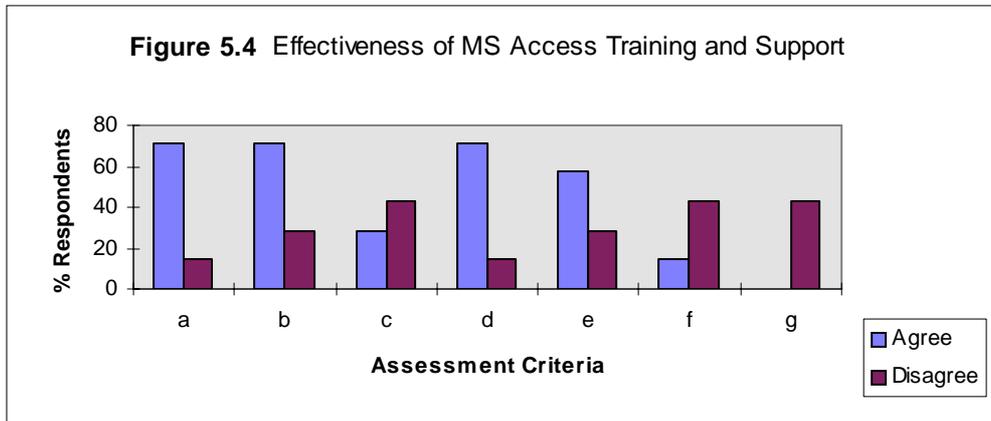


Figure 5.3 Effectiveness of Windows Training and Support



Legend			
a	Course content relevant	e	Course notes useful as reference
b	Improved productivity	f	Convenient support from trainers
c	Improved quality of output	g	Valuable assistance from trainers
d	Improved throughput		



An interesting result was obtained on the Microsoft Access trainee questionnaire (refer Figure 5.4). This was the only survey which recorded a negative attitude to the training approach. Attendees generally disagreed that the Access course helped them to develop better quality database applications. They also disagreed about the convenience of contacting the trainer for support and that the trainer provided valuable assistance after the course. It is interesting to note, however, that six of the seven respondents were from the Information Technology Section, mainly from the development group, which is traditionally dedicated to mainframe application development. It is conceivable that these individuals felt threatened by non-IT professionals instructing them on PC software. They would be unlikely to consider approaching non-IT staff for support, as they may lose face in doing so. Perhaps the dominance of the traditional IT role is challenged by this training strategy.

IMPLICATIONS FOR PRACTITIONERS

With a single-case design, there can be no suggestion of generalizing the findings to other organizations. There are, however, a number of implications from this illustrative study that practitioners may wish to consider. These are summarized in Table 4 and elaborated below.

Table 4. Summary of Implications for Practitioners

- Key-users can provide low-cost quality training
- Key-users can provide effective local support
- Courses and courseware need to be task-focused and related to work contexts
- Distributing training and support activities takes pressure off IT
- Developing key-users as trainers provides personal and organisational benefits
- Management support is necessary for training strategy
- In-house training courses are popular due to convenience, tailoring to local work needs, social aspects
- Alternative strategies are required for ‘special’ cases: executives, IT professionals

Flexible Approach to Training

Davis and Bostrom [8, pp. 66-69] examine two different training approaches, instruction and exploration learning. They describe the process features (reasoning process, level of programming, control of learning) and structural features (level of completeness, learning orientation) of each approach. They report on research which shows that instruction-based is more effective for rote learning (near transfer) and that exploration-based learning may be better for meaningful learning (far transfer) and therefore for software packages. The courses at GCCC are strongly instruction-based except in learning orientation. The reasoning process is deductive; the level of programming is structured; the instructor controls the process of learning; and the materials are complete. The GCCC study revealed the effectiveness of balancing certain elements of both approaches.

However, the design of the courseware focuses on broad outcomes (tasks) rather than emphasising features. Rather than teach commands, the goal is to satisfy a business requirement. The benefit of this approach is demonstrated as the trainees use the courseware student guides after the course as a reference because, unlike the software reference manuals, they are task focused. These student guides also complement the help menus and context sensitive help available with the software, which are generally feature or command focused. During the courses, trainers relate the material directly to Council tasks, and field ‘business-specific’ questions from trainees, rather than just focusing on the specific features of the software package. A variety of comments confirmed this aspect: “The training is relevant to our work”; “The trainers are familiar with work required”; “The trainers know Council requirements.”

This strategy provides further task-focus and enhances the learning experience. So the message for organizations is: in-house trainers and feature-focused courseware can provide an ‘exploration orientation’ to the traditional ‘instruction’ based methods of training.

Alternative strategies need to be developed for groups with special needs. The GCCC study suggests that senior managers, older men, and IT professionals were not accommodated by its EUC training strategy. This demonstrates a need to have a portfolio of alternative training

options including external trainers, external venues, computer-based training, self-paced tutorials, videotape courses, and one-on-one training ‘buddies.’

Partnership Between IT and Users

The GCCC’s strategy for EUC training has enabled an effective partnership to be developed between the IT department and the key users. The expertise of the trainers is recognized and taken advantage of, to benefit the whole organization. The key-user trainers are allies in the workplace for IT [14]. The trainers promulgate the standards relating to documents, software, and applications. They have a more significant presence in the functional areas than the IT professionals and can provide valuable feedback to enable the professionals to focus on more technical and strategic problems, for example, implementation and maintenance of Local Area Networks rather than tie up resources on software package support. The survey shows that the users are satisfied with the quality of support provided by the key-user trainers. As commented by one of the trainers: “It takes the pressure off IT for day-to-day support and time wasters.’

This approach is supported by McLean et al. [13, p. 91] who concluded from the GMA study that “EUC success is, and will continue to be, intimately linked to the quality of the partnership between the end-users and the IT professionals within the organization.” They go on to warn that “this partnership may also be fundamental in determining the overall success of IT resources management, as well as the corresponding effectiveness of the entire organization.”

Serendipitous Benefits

GCCC’s strategy of using in-house key users of software packages to provide the training and subsequent support for these software packages has provided all intended benefits and some unintended ones as well. The trainers’ technical expertise in the software packages they teach has increased through their preparation to run the courses, their research into the queries asked during the courses, and by solving users’ problems in their support role. If external trainers had been used, GCCC would have missed out on these benefits. The trainers all commented on their personal development, including increased confidence, especially in oral communication in groups. This is exemplified by the following two comments provided during interviews:

“At first, I was really scared about standing up in front of a group. Now, I can do it, no worries! As well, I have learnt Lotus inside out, and now my section uses it much more efficiently.”

“When they asked me to run a course, I thought ‘no way’. Now, I really love it. I look forward to training days; it breaks the monotony and I get a real ‘buzz’ out of teaching my workmates. It has certainly helped me overcome my shyness, and I can communicate more effectively with other people at work and socially”.

This low-cost strategy has enabled many staff to be trained and supported, thus facilitating the adoption and diffusion of technology throughout the organization. Relating this back to the model of innovation of diffusion, GCCC’s strategy contains the three attributes which

Robey and Zmud [19, p.24] identified as being consistently associated with the innovation's likelihood of adoption:

- the relative advantages of the technology were communicated and demonstrated by the key users in training courses and in the work place;
- by tailoring the courses to the work situation, the potential adopters values, past experiences and needs were recognized, increasing the compatibility of the innovation;
- the complexity was reduced by providing training and support by key users, with whom trainees could identify and communicate.

The trainers are cultural heroes who have conquered the technology and provide inspiration and confidence to other staff members. The quality of training is confirmed by the responses to the survey. Productivity improvements, better quality output, and greater efficiency are perceived benefits reported by the respondents (see Table 4).

As the software package portfolio changes with time, for example, with upgrades to Windows versions, the framework is in place to incorporate these new versions and indeed even new software packages into the EUC training strategy.

There is potential to derive even greater benefits from this strategy in the future. For instance, the trainers could formalize their product-specific network to enable greater input into course planning, software upgrades, and support issues. The word-processor trainers currently get together to formulate document standards, macros, etc. It is like a 'super user' group and could be used more effectively if formalized.

Because of the number of trainers, and reasonable penetration after six years of running courses, trainers run only from two to six courses each per year. The load is shared and even though the trainers spend some time at home preparing for courses and providing support at work, the actual time spent training does not impact greatly on their routine work.

There are many PC users but only four EUC Support Group staff members. Obviously, if the trainers did not provide support, many more support staff would be needed or the users would experience problems, frustration, and lose productivity thus reducing Council's return on investment in technology.

McCormick [12] highlights the hidden costs of key users providing EUC support: the 'futz' factor and peer support. Futzing involves playing games, or using the system in non productive way, for example, for personal correspondance. At GCCC peer support is still a cost, but , use of the system by playinoccurs when

McCormick [12] highlights the hidden costs of knowledgable users providing EUC support, being continually interrupted by users seeking support, and eventually disturbing many of their peers in search of a solution to a software problem. This sort of disruption is not critical at GCCC as users are aware of who the 'experts' are, and problems are solved efficiently by trained key users.

However, as suggested by the theory on diffusion of IT, there are many positive aspects: they are close to the action, understand the business requirements and priorities, and are on hand to provide 'just in time' training as needed. The trainers say it is not an issue that support takes them away from their regular duties, because they are still contributing to the

organizations' objectives and enabling PCs to be used more effectively and efficiently. If the trainers did not provide support, users would be queued by the Help Desk or waste time 'futzng,' trying to solve the problem themselves.

CONCLUSION

The use of packaged software by office workers has grown enormously as end-user computing (EUC) pervades all operational and management areas of business. Effective training is critical to ensure that these packages and other IT are used to best advantage in adding value to the organization's products and services. As the cost of effectively training a large number of employees in the use of IT is significant, end-user training must be carefully evaluated in terms of its quality, cost, and efficacy.

In 1988, the GCCC conducted a computer-training needs assessment and after considering alternatives, decided to deploy non-IT functional specialists to conduct EUC training, especially in the use of packaged PC software. There is now a pool of about 15 clerical and technical officers who conduct in-house EUC training courses for their peers at the rate of more than 2,700 trainee-hours per year. They also provide appropriate post-course support, freeing IT support staff to concentrate on more technically demanding problems. This relatively low-cost approach to EUC training has achieved remarkably high standards by thoroughly preparing the carefully selected providers, and by using quality courseware in a professional classroom environment.

The findings of this research indicate that instructor-led in-house training can be an efficient and effective way of meeting the burgeoning need for training of staff in the use of packaged software. The key users who serve as the trainers in this context then become an important 'just-in-time' source of continuing support for their fellow workers in the day-to-day use of these packages. The surveys of both trainees and trainers at GCCC and an examination of the costs support the claim that champagne training is being provided on a beer budget.

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