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The London School of Economics and Political Science

REPORT

on the LSE Contribution to
UNIDO International Course
on
Research and Innovation Management

DATES of attendance of LSE staff in VENICE and TRIESTE

Before giving my considered report on the outcome of the LSE component of the UNIDO international course on innovation management, I snall put our role in context by outlining exactly what the LSE group did during their stay in Venice and Trieste. The LSE sent six individuals to Venice and Trieste to support the course. These were:

Professor Ian Angell	September 15th to September 22nd.
Dr. Anthony Cornford	September 26th to October 2nd.
Dr. Steve Smithson	September 23rd to October 1st.
Dr. Adrian Warman	September 17th to September 27th.
Mrs. Susan Warman	September 17th to September 22nd.
Dr. Edgar Whitley	September 16th to September 25th.

Because the LSE component was technical, on any single day each lecturer was covered by a backup, who also acted as joint supervisor for the practical sessions. Mrs. Warman, who was the only member of the party not a lecturer at LSE, is a professional IT consultant, accompanied her husband, Dr. Adrian Warman, and played a major role in the arduous and time-consuming job of setting up the various software packages, when time permitted between practical sessions. The full timetable of the roles played by the team, excluding the preparation effort, are given below.

TIMETABLE OF LSE CONTRIBUTION

IT Tools for the laboratory and office

Sunday September 15th – Presentation of Candidates
Professor Ian Angell
Presentation of an overview of the LSE contribution to the course during the opening session and introductory formalities.

Monday September 16th – Preparation.
Professor Ian Angell
Setting up and checking the hardware in the computer laboratory, including 16 IBM PS/2's, 2 Hewlett Packard Laser Printers, a Hewlett Packard Scanner and a Sharp DataShow projection system and overhead projector. Also the organization of backup equipment in case of machine failure.

Tuesday September 17th – Preparation.
Professor Ian Angell and Dr. Edgar A. Whitley
Loading DOS operating system, as well as WordPerfect and DrawPerfect, together with all the data files needed to support the first week of the course, onto all 16 machines. Running checks - two machine failures were discovered and replacement machines were put in place and loaded with relevant software.

Wednesday September 18th – LSE Day 1.
Dr. Edgar A. Whitley (and Professor Ian Angell)

9:30 - 11:30 : OPERATING SYSTEM (DOS) and WORD PROCESSING (WordPerfect)
Lecture session.
- Introduction to LSE course contribution.
- DOS - Disk drives, files, file names, directories.
- Commands - DIR, COPY, DEL, CD.
- Making backups.
- Starting WordPerfect.
- Saving and loading text.
- Two documents.
- Moving around.
- Entering text and deleting.
- Spell check.
- Thesaurus.
- Tabs, indents.
- Printing.
- Search and replace.
- Blocks - Copy, move.

11:30 - 12:30 : WORD PROCESSING (WordPerfect)
Practical session.
- Use a prepared text, including deliberate errors, for practice.

12:30 - 2:00 : LUNCH

2:00 - 4:00 : WORD PROCESSING (WordPerfect)
Lecture session.
- Shell.
- Headers and footers.
- Fonts, international character sets.
- Bold, underline, italic, centre, flush right.
- Reveal codes.
- Controlling the printer.
- Print previews.

4:00 - 5:30 : WORD PROCESSING (WordPerfect)
Practical session.
- Manipulate some prepared 'scientific documents'.
- Participants start to prepare their final report, using WordPerfect.

Thursday September 19th - LSE Day 2.
Dr. Edgar A. Whitley (and Professor Ian Angell)

9:30 - 11:30 : WORD PROCESSING (WordPerfect)
Lecture session.
- Footnotes.
- Cross-references.
- Styles.
- Table of contents and lists.
- Paragraph numbering.
- Formatting of documents.
- Index / concordance files.

11:30 - 12:30 : WORD PROCESSING (WordPerfect)
Practical session.
- Using prepared examples.

12:30 - 2:00 : LUNCH

2:00 - 4:00 : WORD PROCESSING (WordPerfect)
Lecture session.
- Date functions.
- Locking files.
- Macros.
- Merge/Sort.
- Mail merge.

4:00 - 5:30 : WORD PROCESSING (WordPerfect)
Practical session.
- Participant Projects.
  Text documents.

Thursday September 19th – Preparation.
Dr. Adrian Warman and Mrs. Susan Warman
Loading of Lotus 1-2-3 onto the machines whenever time was found between practical sessions, and checking software was operational.

Friday September 20th - LSE Day 3
Prof. Ian O. Angell (and Dr. Edgar Whitley)

9:30 - 11:30 : BUSINESS and SCIENTIFIC GRAPHICS (DrawPerfect)
Lecture session.
- Columns.
- Tables.
- Incorporating graphics images.
- Spreadsheet links.
- Construction of sophisticated documents.

11:30 - 12:30 : BUSINESS and SCIENTIFIC GRAPHICS (DrawPerfect)
Practical session.
- Participant Projects.
  Preparing in-house working-paper series, staff newspaper, scientific journal, or books.

12:30 - 2:00 : LUNCH

2:00 - 4:00 : BUSINESS and SCIENTIFIC GRAPHICS (DrawPerfect)
Lecture session.
- Basics.
  Form screen, Graphics Screen, command menu, pop-up menu.
- Drawings, Combine Text and Symbols.
- Charts.
  Chart types, Chart Form, Viewing of Chart.
- Saving Charts and Drawings.

4:00 - 5:30 : BUSINESS and SCIENTIFIC GRAPHICS (DrawPerfect)
Practical session.
- Using prepared examples.

Friday September 20th – Preparation.
Dr. Adrian Warman and Mrs. Susan Warman
Loading of Windows operating system onto the machines whenever time was found between practical sessions, and checking software was operational.

Saturday September 21st - LSE Day 4.
Prof. Ian O. Angell (and Dr. Edgar Whitley)

9:30 - 11:30 : BUSINESS GRAPHICS (DrawPerfect)
Lecture session.
- Importing Worksheet Data .
- Creative presentations.
  Maps, templates.
- Editing, combining Drawings and Charts.
- Linking with WordPerfect via PostScript files.
- Participant Projects.
  Creating Scientific diagrams.

11:30 - 12:30 : MANAGEMENT OF INFORMATION SYSTEMS
- Integration of packages in an Office/laboratory environment.
- Management of the Information Technology.
- Management of Information Systems.
- Trends, risks, opportunities.
- The attitude of managers and users to IT.
  Discussion of Price-Waterhouse Review.

12:30 - 2:00 : LUNCH

2:00 - 4:00 : MANAGEMENT OF INFORMATION SYSTEMS
Lecture session.
Presentation and discussion of 'Angell & Smithson' book.

Saturday September 20th – Preparation.
Dr. Adrian Warman and Mrs. Susan Warman
Loading of Project for Windows project management package onto the machines whenever time was found between practical sessions, and checking software was operational. Some computers were found to be overloaded and certain wordprocessing software and data-files were deleted.

Monday September 23rd - LSE Day 5.
Dr. Adrian Warman (and Dr. Edgar Whitley)

9:30 - 11:30 : SPREADSHEETS (Lotus 1-2-3)
Lecture session.
- Analytic modelling with spreadsheets.
  The benefits, the dangers. 'What-If' analysis.
- Basic spreadsheet capabilities of Lotus 1-2-3.
  Spreadsheet analysis, graphics.
- Basic concepts.
  Menus, navigation and the keyboard.
  Cells, labels and values.
  Formulae, ranges and results.
  Relative and absolute references.
  File saving and loading.

11:30 - 12:30 : SPREADSHEETS (Lotus 1-2-3)
Practical session.
- Practise Lotus 1-2-3, using prepared examples.

12:30 - 2:00 : LUNCH

2:00 - 4:00 : SPREADSHEETS (Lotus 1-2-3)
Lecture session.
- Working concepts.
  Formats.
  @functions.
    Statistical @ functions.
  Graphs.
    Creating graphs.
    Legends and titles.
    Multiple graphs.
    Printing graphs.

4:00 - 5:30 : SPREADSHEETS (Lotus 1-2-3)
Practical session.
- Candidates create their own spreadsheets, and work on sample problems to illustrate concepts.

Tuesday September 24th - LSE Day 6.
Dr. Adrian Warman (and Dr. Edgar Whitley)

9:30 - 11:30 : OPERATING SYSTEMS (MicroSoft Windows)
Lecture session.
- Graphic User Interfaces.
  Objectives and overview.
  The 'point-and-click' paradigm.
- Windows fundamentals
  Installation of MS Windows.
  Basic elements – mouse, window components, icons.
  Working with menus. Dialogue boxes
  The 'help' facility.
- Working with MS Windows.
  Moving and changing objects.
  Running applications. Switching between tasks.
- Windows Control Panel.
  Desktop colours. Desktop options.
  Printers. International options. System features.

11:30 - 12:30 : OPERATING SYSTEMS (MicroSoft Windows)
Practical session
- Using prepared examples.

12:30 - 2:00 : LUNCH

2:00 - 4:00 : OPERATING SYSTEMS (MicroSoft Windows)
Lecture session.
- Windows Program Manager.
  Working with groups.
  Starting application from Program Manager.
  Program Information Files (PIF).
- Windows File Manager.
  Working with directories – directory tree, directory windows.
  Working with files. Starting applications from File Manager.
  Disk and diskette maintenance.
- Major Windows application.
  Use of Optical Scanner.
- Windows Write and Paintbrush.

4:00 - 5:30 : OPERATING SYSTEMS (MicroSoft Windows)
Practical session.
- Participant projects.

Evening session : Lecture on DATA SECURITY : **Dr. Warman.**
Practical issues and realities. The need for data maintenance. System protection strategies. Passive and active threats. Hackers and viruses.

Wednesday September 25th - LSE Day 7.
Dr. Steve Smithson (and Dr. Adrian Warman)

IT in Project Management

9:30 - 11:00 : PROJECT MANAGEMENT (Project for Windows)
Lecture session.
- Principles of project management.
  The staged approach - stages, activities and deliverables.
  Overview of MicroSoft Project for Windows software.
  Introduction to case material.

11:00 - 12:30 : PROJECT MANAGEMENT (Project for Windows)
Practical session.
- Starting to use MS Project for Windows.

12:30 - 2:00 : LUNCH

2:00 - 4:00 : PROJECT MANAGEMENT (Project for Windows)
Lecture session.
- Developing a new project.
  Planning, estimating, resource allocation.
  PERT and Gantt charts.

4:00 - 5:30 : PROJECT MANAGEMENT (Project for Windows)
Practical session.
- Participant projects.

Thursday September 26th - LSE Day 8.
Dr. Steve Smithson (and Dr. Adrian Warman)

9:30 - 11:00 : PROJECT MANAGEMENT (Project for Windows)
Practical session.
- Using prepared example.

11:00 - 12:30 : PROJECT MANAGEMENT (Project for Windows)
Lecture session.
- Project monitoring and control.
  Communication and reporting.
  End of stage reviews.
  Failing projects and corrective action.

12:30 - 2:00 : LUNCH

2:00 - 4:00 : PROJECT MANAGEMENT (Project for Windows)
Practical session.
- Using prepared example.

4:00 - 5:30 : PROJECT MANAGEMENT (Theory of Project Management)
Lecture session.
- Issues and trends in project management.
  Project failures.
  Communication and coordination.
  People management and motivation.
  Increasing formalization.

Human and Organizational Resources

Monday September 30th - LSE Day 9.
Dr. Tony Cornford (and Dr. Steve Smithson)

These two days of the course were based on a discussion and group work format.
The resources used included video and written case material.
Participants were divided up into 'syndicates', where they were expected to write reports on the case material, and to take part in role-playing exercises.

9:30 - 10:30 :
Lecture session.
- Introduction to the module and to case based work.

10:30 - 12:30 :
Case material session.
- Video: *Beyond the Micro Muddle*: (30 mins).
  General questions and clarifications on the case.

  Groups of participants were then asked, on the basis of the video, to prepare a brief report on what should be done in the company, and what had been learned.

  Discussion of syndicate reports.

12:30 - 2:00 : LUNCH

2:00 - 3:00 :
Case material session.
- Summary of ideas generated from the Micro Muddle.
  Discussion of 'Keen and Woodman' paper.

3:00 - 4:30 :
Lecture session.
- Introduction to the issues of information systems strategy.

4:00 - 5:30 :
Case material session.
- Case: *Travelling to the Top.*
  Participants, having read the case prior to the session, started the discussion of the key elements of success that they had been asked to identify in the case.

Tuesday October 1st - LSE Day 10.
Dr. Tony Cornford

9:30 - 12:30 :
Case material session.
- Video: *The Corporation*.
  General questions and clarifications on the scenario.

  Groups of participants were then asked, on the basis of the video, to prepare a brief report on what had been done wrong, what had been learned, and what should be done subsequently. The various groups were each given a different target audience for their report (Managing Director, Hardware Supplier, Field Service Manager, Data Processing Manager, Competitor).

  Discussion of syndicate reports.

12:30 - 2:00 : LUNCH

2:00 - 3:00 :
Lecture session.
- The concept of an information strategy
  Discussion of 'Ives & Learmonth', 'Porter & Millar' papers.

3:00 - 5:30 :
Case material session.
- Video: *The Information Game*.
  General questions and clarifications on the scenario.

  Discussion of the video by the whole group, focussing on the role of consultants, and the real utility of I.T. strategies.

HANDOUTS

(Copies of each handout are available on request.)

Each participant was given a copy of each of the following documents:

Substantial typed-handouts concerning the introductory details of DOS, WordPerfect, DrawPerfect, Lotus 1-2-3, MS Windows, Project for Windows, and the Case material, each written by the LSE lecturer who dealt with the corresponding part of the course.

Information Systems Management: Opportunity or Risk, by Angell and Smithson, Macmillan Education, 1991.
This book, written by two of the course lecturers, introduces the opportunities and the risks of using modern information technology. It is meant to be read only after the completion of the course, with the intention of clarifying the management roles necessary in making sure that organizations makes the most of the technology, and avoid the hazards.

Price Waterhouse Information Technology Review
This is an annual report published by a leading IT Consultancy Group. It includes an analysis of surveys of the questionnaires of over 700 Data Processing managers, in regard of the major issues facing them. It also contains predictions and commentaries about the IT industry in the UK and abroad.

The following written Case and discussion material was distributed among the participants, and includes:

Travelling to the Top, taken from 'Business Computing and Communications'.
This article describes how a travel company (Thompsons) set out to use computers as part of an overall strategy of innovation and growth.

Ives & Learmonth,
The Information System as a Competitive Weapon, Communications of the ACM.

Porter & Millar,
How information gives you competitive advantage, Harvard Business Review.

Keen & Woodman,
What to do with all those micros, Harvard Business Review.

VIDEO Case Material

The discussion and role playing groups used the following video material in their discussions:

Beyond the Micro muddle.
This video describes what can go wrong in a company that has poor IT management structures, and that fails to adapt and react appropriately to the naive enthusiasm of a sales department for a micro-computer based development. It makes the argument for the changed role of IT people as a service department.

There was plenty of good material for the managers to discuss here. The discussion focussed on the jobs and roles that the players occupy, the critical problems that they face, and their responsibilities in getting things to actually work.

The Corporation
This video follows an organisation that is 'bounced' into a poorly considered strategic Information Technology programme, which fails. The reasons for failure are interesting to debate – predatory suppliers, old fashioned and out-of-date DP experiences, powerful user pushing too hard, failure to think it all through at the business level etc.

The Information Game (Corporation II)
The sequel – the Information Game – is about the activities of a consultant who is called in to try and redeem the situation. Of course he succeeds! It enables the discussion of a number of issues in regard to exactly what an IT strategy is.

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Full descriptions and details of the prepared examples and project material were given to the candidates, along with a flexible disk containing pre-prepared examples, documents and scanned images.

We also distributed a **questionnaire** from which we have collected information on the delegates attitudes to the LSE part of the course, with the intention of identifying any problems and collecting new ideas, that would prove useful should we be invited to participate in any future UNIDO courses on Innovation and Management.

Philosophy of LSE course component

The course organizers originally asked the staff from LSE to introduce the participants to the issues regarding the use of information technology in the management of their laboratories. At the same time we were requested to show the delegates that this introduces an extra management role, that of managing the technology – not an easy task for them. We were given ten days to lead them from specific functionality through management of technology to strategic management.

As it turned out, the delegates were scientists of a far more senior level than we had been led to expect. It therefore necessitated a major reorganization of the emphasis of our lecture material. The content itself was suitable, as it had been carefully chosen to allow for this very eventuality. We therefore played down the functionality of IT and instead concentrated substantially on the strategic issues.

We had designed the practical work so that it would be of direct use to a laboratory manager, in his role of developing and promoting innovative products within a market economy. We used various 'market-leader' software packages, so that the delegates could learn the practical problems of managing IT, we were not primarily interested in the functionality of the packages. Issues such as the development of good practice, and of reasonable expectations of the IT were covered in detail, as these topics are seen as essential for good management.

We asked the delegates to start a number of IT projects, that are typical of the requirements of an automated office in Western Europe or the USA. We asked them to design Business Cards and Headed Notepaper, create a business plan. We deliberately led them into situations that demonstrated problems of file consistency and questions of style, when considering a multiple user base for a single document. This led on to various questions of the management of Office Automation.

At the same time, because of the scientific background of the delegates, the examples we chose were scientifically grounded. For example we discussed how IT can be used in the production of journals, books, conference proceedings, working paper series, as well as presentation material, not only for scientific conferences, but perhaps more importantly for business presentations where requests for funding of projects are made, and where the products of research have to be marketed. The main example in the project management section concerned a project to set up a new research centre.

The overriding intention was to lead the delegates into situations where they could discuss the subjects we introduced.

This necessitated major support for Group Question and Answer sessions, and perhaps more importantly one-to-one 'help sessions' covering specific technical problems.

Results of the Questionnaire

I enclose copies of the questionnaire that were completed by 19 of the delegates. You can see from the comments that they were very positive about the LSE group, and we were delighted by the response. The scores on the second page of the document averages to over 8 – most conference organizers are delighted with any average score over 6. You can see for yourself just how positive the responses are. But we also were very pleased with the feedback from the group in the talks – they were very easy to talk to. The attendance rate was excellent, given the substantial amount of material we covered, and the natural attractions of Venice and Trieste. I can speak for all five LSE staff, when I say it was a pleasure to talk to such a knowledgable group, and we learned much from our two weeks.

Ways of making the course better

Although we are delighted with how well our part of the course was received, we have a number of proposals for making the course even better.

1) One of the delegates asked for one computer per delegate, but this is obviously impossible because of cost and space considerations. We will have to stay with two delegates per computer, although perhaps we should have three laser printers for the group, rather than two. We did have performance problems with some machines. For future courses it is essential that the machines should be more powerful, at least 386 based machines, with a minimum of 2 Megabytes of RAM and 40 Megabytes of hard-disk space.

2) The computer room we used was a little cramped, even with just over 20 students, although in all other resects it was ideal; if this same accommodation at the University of Venice is used again, then the absolute maximum size of the group must be 28 delegates. This implies that the photocopying, laser printing, video player, and all secretarial support must be placed in a room adjacent to the computer room. So the minimum space requirements are a lecture room, a computer room with air conditioning, and a secretarial room perhaps holding a video player on open access. Having said this, it would be preferable for the group-project discussions to be held in small private rooms, so that the groups of between six and eight delegates can hold their project meetings undisturbed. The video sessions were a great success, and in future we would plan to extend this part so that students could view much more video material in the evening sessions on a voluntary basis, in preparation for the discussion groups.

3) The course content was far too intensive, both in the amount of the teaching time and in the sheer volume of material. Being the first time this course was given, we were obviously nervous that the course should not appear lightweight, but we erred on the side of being heavyweight, or even super-heavyweight. Next time you must reduce not only the volume, but also ensure that there are very few, or even no evening sessions. You risk driving the delegates to exhaustion – they need time to recover!

4) It is essential that more material on Computer Networks and Databases be incorporated into the course content.

5) Apart from viewing the videos in the evening, it would be of great benefit if the computer room be kept open until late, for the delegates to experiment with the packages, if they so wish. There were many requests for such supervised sessions with the present delegates. The LSE staff were more than happy to oblige, but the security system of the building made this impossible.

6) Although we were very technology driven, some of our material would have gained from the availability of a number of flip charts, especially placed in the rooms where the group projects are undertaken.

7) The international mix of delegates was excellent, but why were there no women in the group? Perhaps future courses can give some thought to attracting female delegates.

6) The course was held in Venice and Trieste, yet it may just as well have been Mestre. The delegates had very little opportunity to enjoy these wonderful cities. You must in future build in a social event on one afternoon per week, perhaps with organized tours of the towns, with visits to museums, churches and perhaps a theatre. Also some lectures on the history of Venice and Trieste, and the cities' present day economy would be an excellent way of helping the delegates appreciate and understand the wonderful environment of the course.

7) The organization of coffee-breaks and lunch breaks should also be more structured. You cannot teach hungry and thirsty students. Perhaps there should be coffee and soft drinks on tap. Similarly perhaps the mid-day meal should be made free to the students, so that they do not have to budget, balancing food against other purchases. We do not want delegates to forego a decent meal so that they can spend their money in other ways, and Venice in particular is a very expensive city.

8) We mentioned that we had to undertake a major rewrite of our lecture material when we found out the type of delegate on the course, and we sensed that our original material was aimed at a slightly different audience. We managed to achieve the changes, but only 'by burning the midnight oil'. Given more prior warning of the type of delegate, and perhaps by making the group more homogeneous, it will be possible for us and other speakers to focus the material more, and thereby make the course far more appropriate and useful for the delegates.

I cannot finish this report with a note of required changes; I must conclude on a very positive note. This course was extremely successful, probably far more successful that we had dared hope. But we have the opportunity of making it even better!

I would like to take the opportunity to thank Professor Forti and his team at ICS for asking us to take part in this first course on the Management of Innovation, and for being of such help during the preparation and presentation of our material. They made our task very much easier. On behalf of myself, and my colleagues Dr. Cornford, Dr. Smithson, Dr. Warman and Dr. Whitley, I can say that the two weeks we were involved with the course were arduous, but we enjoyed every minute, and we hope that we will be asked to take part in future courses.