

A CENTRAL COURSE IN CONTINUING ISM EDUCATION FOR IS PROFESSIONALS

Prof. Eugene Kaluzniacky
Business Computing
University of Winnipeg
4M60-515 Portage Avenue
Winnipeg, MB R3B 2E9
Canada

ABSTRACT: A comprehensive, 4-year continuing education programme in Information Systems Management was recently implemented at the University of Manitoba, Winnipeg, Canada. A central course in the programme deals with Information Resource Management. This course, developed and delivered by the author, is taught to DP professionals (usually analysts/programmers) and based not on a text book, but on a large number of relevant IS journal articles. To assist a student in synthesizing the material, a lengthy study guide is provided for each class. Also, summaries of sections from different text books are handed out as supplementary notes. Weekly summary questions emphasize points important to retain. Relevant audio and video tapes are also used in the classes. Group discussions of IS management cases provide yet another mode of learning. Students also participate by relating noteworthy incidents from their place of employment. In addition, each student is required to submit a term paper (project), usually on a topic of immediate career relevance. A definite amount of time is set aside for personnel and psychological issues including career planning, stress management, motivation, and the concept of "social software". The broad topic spectrum, variety of course components, and a person-oriented teaching philosophy have given many students a substantial and invigorating opportunity for professional development.

KEYWORDS: Continuing IS Education, Current Journal Articles, Information Resource Management, Innovative Teaching Approaches.

INTRODUCTION

With ongoing technological innovations and business re-organizations, the role of the information systems professional is changing. This reality is being emphasized significantly in current literature [1,2,3]. A majority of IS professionals (programmers and system analysts) have come up through "traditional" computer science programmes at university or analyst/programmer courses at a vocational college. After several years experience, many

people realize the need for further education, yet they are in a quandary as to what courses/programmes to take.

Realizing this problem, the Continuing Education Division at the University of Manitoba recently established a re-structured certificate programme in Information Systems Management. Since many programmers/analysts eventually gravitate towards managerial positions within the IS function, such a programme fills a widespread need within the data processing community. The programme is

offered through evening courses for a four-year duration. Eight 12-week courses must be completed by the student in order to receive a certificate (See Figure 1 on the following page). The courses balance technical and management perspectives and thus provide the student with thorough, relevant knowledge for professional advancement. The programme is endorsed by the local chapter of the Data Processing Management Association (DPMA) and the Canadian Information Processing Society (CIPS). It has also been approved for the

Figure 1: INFORMATION SYSTEMS MANAGEMENT PROGRAMME REQUIRED COURSES

Management and Accounting
 Management Principles and Practices
 * Information Resource Management
 Data Administration and Modelling
 Project Management
 Technology Option (see below)
 Management Option (see below)
 Computer Case Study

Management Options

Introduction to Marketing
 Functional Areas of Business
 Managerial Communication
 Research Methods for Managers
 Organizational Behaviour

Technology Options

Networks
 Data Center Operations
 Technology Acquisition
 Technology Topics

Figure 2: INFORMATION RESOURCE MANAGEMENT COURSE TOPICS COVERED

1. The nature of management; new roles for IS managers; introduction to IRM; Nolan's growth stages.
2. Organization placement of IS; data resource management (includes data modelling overview).
3. Higher-level system planning; IRM planning.
4. Lower-level planning; the application portfolio.
5. Management issues in system development (using basic life cycle, prototyping, structured approaches, CASE); object-oriented development.
6. Management of programmers and analysts; basics of project management.
7. Acquisition of hardware and software; use of IS consultants; management issues in: decision support systems, executive information systems, expert systems.
8. Management of operations; IS restructuring, outsourcing; cost controls: chargebacks, IS budgeting; quality control in IS.
9. EDP auditing/controls; disaster recovery, virus prevention; management issues in distributed data processing; LAN management, client/server concept, downsizing; electronic data interchange.
10. CIM, office automation, image processing, end-user computing, Information Center management; legal issues in computing.
11. Human resource issues in IS; stress management for the IS professional; personality types in IS work; IS career planning; educational options; motivational issues; sociological impact of computers, miscellaneous.

awarding of contact hours by the Institution for Certification of Computer Professionals (ICCP). An integral, overview course in this programme, which "ties together" much of the material expanded upon in other courses, is entitled "Information Resource Management". It is this course which the author was given the task of developing and first delivering in the Fall of 1989.

THE "INFORMATION RESOURCE MANAGEMENT" COURSE

A Perspective for the Course

The course description, as approved by the Advisory Committee, stated: "This course will survey the issues and the problems in information systems management and (will) examine the attitudes and techniques which are fundamental to the successful management of this function". Thus, the instructor had considerable flexibility in establishing course content and developing modes of delivery within the above context.

It was evident to the instructor that this course would deal with a large number of topics. Although there is no prescribed order in which the courses must be taken, because of the scheduling arrangement, for about one-third of the students in this course, it was their first course in the programme. Thus, five factors came to mind when planning course content and delivery.

First, the students would need to be familiarized with the management process. At the start, many would need to realize the absence of a "rigid structure" in many managerial situations, a structure to which they may have become accustomed through computer programming. Second, the students would need to see management concepts applied specifically to data processing, especially in planning and control. Third, students would need to be exposed to a variety of newer technologies and approaches to information delivery, and they would need to see unique managerial problems arising out of each technology (for example EDI). Fourth, students would definitely need an

appreciation of human resource issues as they relate to the IS function. Finally, the students would need to understand more deeply how the IS function relates directly to various levels of management of the entire organization.

It was also realized that the approach to the course would need to emphasize the professional nature of the subject in terms of the volume and depth of the material. Also, for the course to carry out its intended "mission", two other keywords would need to guide the course development: "relevance" and "involvement". Students would need to realize that the material they are learning is directly relevant to the state of the industry today and, at least in part, directly relevant to their particular jobs. With this type of motivation, the students would need opportunities to become involved in the course beyond passively receiving notes and preparing for an examination. It, thus, also became clear that the personal involvement of the instructor would need to be at a high, committed level. It is with such a basic "vision" that development of the course content and specific teaching approaches could begin.

The Content of the Course

Twelve three-hour evenings (one per week) were allocated to the Information Resource Management course, with the last evening set aside for the final examination. Thus, the material was divided into eleven sections as outlined in Figure 2. Even a brief examination of the course content should cause a student to realize that a) there is indeed much material in the course; b) the course covers a broad range of topics; c) many of the topics are current, seemingly relevant, and potentially quite interesting.

The content attempts to reflect a comprehensive definition of information resources as appearing in all forms (data, voice, text, image), processed by computer (and related) technology, generated by information systems (MIS, DSS, OA, ES etc.) and disseminated through communication systems (e.g. networking, teleconferencing, etc.) [4]. It also responds

to an accepted understanding that "IRM concepts rest under the premise that information, information-related activities, technologies, and personnel are important organizational resources that deserve to be managed like any other resource in the organization" [5]. Furthermore, the content parallels significantly the proposed content in current literature for a graduate-level IRM course which identifies nine separate areas: planning, organization, management of system development, management of information technology, financing of information systems, control and evaluation of information systems, acquisition of IS physical resources, staffing/directing IS human resources, and management of research development [6].

The first lesson introduces both the general term "information resources management" and the more formal, specific "Information Resource Management" (IRM) concept. It sets the stage for the remaining lessons by focusing on the concept and functions of management. Also, it introduces the "classic" concept of Nolan's growth stages.

Lessons 2 to 10 (as in Figure 2) deal with organizational placement of IS, data management, IS planning, development, and control, different types of systems (e.g. DSS, ES, EIS), management of computer operations, newer technologies (e.g. image processing, EDI) and associated management issues, end-user computing, and also legal issues in IS.

Lesson 11 (the last one) is somewhat unique in content. It starts with several issues relating to human resources, for example, achieving productivity among programmers, creating environments for optimal job satisfaction, retaining quality personnel etc.. A noteworthy idea here is that of extending Maslow's well-known "hierarchy of needs" beyond self-actualization to "self-donation" (or self-transcendence). This insightful innovation is applied specifically to IS management in a recent book by Thierauf [7].

Then, the instructor (who is qualified to administer, interpret and work with the MBTI) gives an outline of the Myers-Briggs Personality Type Indicator (MBTI)

and its relationship to IS functions. The Myers-Briggs indicator is a widely used, applied psychological instrument which identifies one's personality preferences along four dimensions: Introversion/Extraversion, Intuition/Sensing, Thinking/Feeling, Judging/Perceptiveness [8]. It has been used in MIS research on team effectiveness [9], Information Center staffing [10], programming ability [11] and computer anxiety [12]. The concept of "social software" [13] is explained, in which system developers try to match system characteristics to the personalities of end-users.

Following comes a section on stress management which includes topics such as Type "A" vs Type "B" employees, dealing with addictive behaviour in the workplace [14] and the role of communication between supervisor and subordinate in reducing distress. Also, several negative effects are pointed out relating to society's relying too intensely on computer technology, as expressed by noted computer pioneer Joseph Weizenbaum [15] and sociologist Sherry Turkle [16].

Lesson 11 ends with a thorough discussion of MIS careers and an outline of possible paths of further development (such as MBA, professional accounting designations, financial planning courses etc.) especially for people who, at this point, may not be certain of what the correct future direction is for them. An emphasis is made not on career planning as such, but life planning, a wholistic approach incorporating one's personal life philosophies, awareness of one's personality type, as well as one's focus on activities which re-generate his/her intellectual, emotional, and physical energies. The role of one's job in one's life, as discussed by Stephen Covey [17] is examined. Recent motivational literature, for example, the work of Anthony Robbins [18] and John Powell [19], is discussed in the context of a variety of Information Systems occupations.

Since this is a course for working professionals rather than for graduate students in an academic setting, care is taken to balance theory with practice

through coverage of applied topics such as management of programmers, political issues in introduction of new technologies (e.g. CASE), disaster recovery, legal issues, stress management etc.. A practical dimension is also added through group discussions in which students present relevant scenarios from their place of employment.

The Myers-Briggs indicator ...has been used in MIS research on team effectiveness [9], Information Center staffing [10], programming ability [11] and computer anxiety [12].

The Delivery of the Course

With a somewhat ambitious course content, the delivery of the course needed to be carefully planned so as to achieve high learning effectiveness. Having realized the truly broad spectrum of issues and topics to be covered in the course, the instructor decided not to use a particular text book, but to structure the course around a large number of current, relevant articles from publications such as **The Journal of Systems Management, Datamation, Information Center, and Canadian Datasystems**. Occasionally, material from more scholarly journals such as **Communications of the ACM** and **MIS Quarterly** are also included.

Each of the eleven lessons refers to 8-9 articles. To facilitate a student's knowing what to extract from these articles and how to synthesize the material, each lesson has its own STUDY GUIDE, prepared in advance by the instructor. A study guide for an individual lesson consists of 5-8 (single spaced) typed pages and outlines the topics in an orderly fashion, referring the student to specific sections of individual articles at the appropriate places. A study guide basically guides a student's progressive understanding of a topic, tying in the ideas from several articles and

providing even further explanations where necessary. It is, in effect, a combination of class notes and guidance as to when and what to read to obtain an effective synthesis of concepts. Students have the opportunity to review the articles before class. During the class, the instructor goes over the study guide in detail, pausing in places to emphasize further an important point or to solicit comments from students based on their work experiences. At times, prepared overhead transparencies are also used.

With such an arrangement, the students rarely need to take down class notes, since their "notes" are given to them each week in the form of study guides. This allows the students to become more directly involved in the classes. As for the articles, students are made explicitly aware of the need to know the "personality" of a journal from which an article is taken. They get to appreciate the difference, for example, between the focus of a trade magazine and that of a highly academic MIS research journal.

In addition to study guides, articles, and overheads, students are occasionally shown video tapes on relevant topics (for example the workings of a CASE product) and they also get to hear audio tapes from Information Systems conferences. At times when material from a relevant book is referred to in the class, the book itself may be passed around for students to examine. Typed summaries of sections of the book may be handed out.

Aside from frequent verbal contributions during classes, students are also encouraged to contribute their own relevant articles, usually from publications available at their place of work. In this way, new articles are available to the instructor for inclusion in the following year's course offerings.

Approximately every other week, during the latter part of the class, students are handed out a "mini-case" relating to material being currently covered. They break up into small groups and may take on different roles required by the case. Such discussions often provide fruitful insight in an informal, collegial atmosphere.

Besides reading study guides and article and class participation, students are also required to do written work. The mark distribution for the course is as follows:

2 written assignments	30%
Main project	20%
Class participation	5%
Final examination	45%
Total	100%

After every class, students receive a set of 10-15 "Summary Questions" pointing out what is important for them to retain from the class. Out of those, the instructor selects 3-5 to be handed in. The remainder of the questions are for personal review. Answers to assigned weekly questions are handed in two "batches", once at mid-term and once at the end of term. Each "batch" (assignment) is then worth 15% of the final grade. Students generally put in considerable effort in answering the questions and receive superior marks.

In addition to written responses to summary questions, each student is required to submit a major 12-15 page (double spaced) paper ("project") on a topic of interest which relates to information management. One-page project proposals are due on the fourth evening. Once approved, the student works independently, with occasional guidance from the instructor. During the last two classes, students give brief (3-5 minute) informal verbal summaries to the class, pointing out the main ideas learned in their project. Then, people that are interested in receiving a formal copy of a student's paper may request him/her for it. Such an exchange provides an additional opportunity for gleaning valuable information on topics of particular interest. Students usually choose topics related to their current work. Popular topics are expert systems, IS planning, implementation of CASE, software quality control etc..

The final examination is written for 3 hours during the 12th evening. It consists of three parts. Part A examines three basic (primary) topics in IRM (e.g. MIS planning, data management, and end-user computing issues). Part B deals with somewhat more specific issues, as covered in the classes. Here a student can choose three out of five

questions, where each question consists of several parts. Part C is a short case on IS management. The examination is worth 45% of the final grade. Individual project papers are due one week after the final examination.

The delivery of the course requires much work on the part of the instructor. Yet, this approach does respond to the "critical success keywords" for a course of this type: "relevance" and "involvement".

The Impact of the Course

The Information Resource Management course, given in the above outlined format, has been a significant success! Both the course and the instructor were evaluated very positively. After the most recent offering, in a questionnaire answered by all 31 students, 25 appreciated the broad scope of the course; 18 stated that they would likely be reading more articles in DP journals; 20 left with a genuine motivation to learn, and only 5 said that the

course did not make a significant impact on how they view their careers. Overall, 23 students found the course excellent or very good, 5 found it good and 3 found it average. Selected personal comments from students are presented in Figure 3. Most of all, the students found the material very relevant to their work situation. To some, this course was an exposition of the current state of the entire data processing industry. On the personal level, students learned from interacting with others, especially in small group discussions. Also, many students gained significant insight on their own career planning, especially through the last lesson. A number of students, for example, have expressed an interest in doing the Myers-Briggs Questionnaire and discussing the results with the instructor so as to plan a most suitable and rewarding career path.

Although the workload was indeed significant (and required 8-10 hours per week of work outside of class), most students seemed to accept this. The

relevance of the articles, the detailed study guides which literally guide the students through each article, the enthusiasm generated by class participation and particular encouragement from the instructor seemed to generate much extra motivation. On a number of occasions, the students' employers took an interest in the articles and other handouts and promised to send more students in the following years. Some employers expressed an interest in subscribing to the journals from which the articles were taken.

For about one-third of the students (there are approximately 30 students in this course each year) this course was the first in the ISM programme. From this course, the students developed an appreciable overview of the data processing industry and of a number of managerial issues therein. Also, they recognized where specific topics (such as data administration or project management) on which there is later an entire course in this programme, fit in. In addition, students for whom this course was the first in the programme, developed a sense of professional study discipline, yet a discipline motivated largely by enthusiasm and genuine interest.

**Figure 3: INFORMATION RESOURCE MANAGEMENT COURSE
SELECTED STUDENT COMMENTS**

- Good content! Tremendous effort in preparation.
- Incredibly relevant - generated many new ideas in each class.
- I have passed along ideas to the management of my company.
- Wish all management staff could take at least some portion of the course.
- Very interesting articles.
- Course materials were interesting and well-read by many of my co-workers.
- Excellent concept of obtaining information from many different articles.
- Very thorough and complete ... Well done!
- I've made use of several (articles) within my work unit already.
- This is the most relevant course to what I am currently doing. Very timely.
- I was pleased to see a wide range of topics.
- Have already applied the (learned) principles to my job.
- Lectures were extremely informative.
- Very energetic instructor ... very interesting, enthusiastic ... with an obvious interest in students.

WHAT CAN BE LEARNED?

What has made this particular IRM course "different" and successful? What can other educators gain from this effort? The questions can probably be answered somewhat differently by different students. Following, however, are several characteristics of course content and delivery which may have "made a difference".

The course material was very broad in scope, yet substantial, giving a thorough overview of nearly the entire data processing industry today. Students may have felt that they were learning "the right things".

The use of over 85 recent articles, most of them easily readable, did not call the relevance of the material into question.

The handed-out, detailed study guides, referring specifically to individual sections of articles, made it possible to

cover so much material while retaining the students' confidence that the course was "do-able". Also, students could spend time absorbing the material rather than taking notes.

The opportunity to do a project on a topic immediately relevant to the student added motivation.

"Summary questions" after every class helped the student to realize what was really noteworthy in the class. The most important of these questions were studied more fully, since answers to them were required to be handed in.

Group interaction during case discussions moved the student beyond the role of "passive recipient" to that of active participant. Also, frequent soliciting of students' real-life experiences relating to material being covered provided for very useful and interesting discussion.

The focus on career paths, "life planning", and psychological issues such as the influence of the Myers-Briggs type in systems work provided extra, valuable insight for one's own current situation.

Finally, the instructor's genuine interest in the individual students and in their professional welfare from the point of view of not only career advancement, but also personal job satisfaction was generally appreciated.

CONCLUSION

Nearly everyone will agree that data processing professionals need continuing education. A 12-week Information Resource Management course, in the context of a ISM certificate programme, as described above, has provided a valuable

alternative to currently prevalent continuing education short-courses and workshops. Such a course is extensive, relevant and affordable. After four years of offering, the course is developing a very respectable reputation. It is hoped that this experience will provide valuable insight to those looking for ways in which to keep up in a challenging and continually growing field.

REFERENCES

1. Ginzberg, M.J. and J.J. Baroudi. (1988, May) "MIS Careers - A Theoretical Perspective", Communications of the ACM, 586-594.
2. Messmer, Max. (1990, Summer) "A New Set of IS Skills for the '90s", ON-LINE: A Newsletter for Information System Professionals.
3. Rouse, R.A., and C. Hartog. (1988, May, June) "The New MIS Professional", Journal of Systems Management, 6-10, 19-21.
4. Khosrowpour, M. and G. Yaverbaum eds. (1989). Information Technology Resources Utilization and Management: Issues and Trends. Harrisburg, PA: Idea Group Publishing.
5. Laribee, Janet F. and Karen S. Nantz. (1992) "Information Resources Management: Topics, Concepts, and Resources for Teaching IRM To Business Students", Journal of Information Systems Education, 4(1), 12-17.
6. Laribee, Janet, (1991, Fall) "Information Resource Management In the Graduate MIS Curriculum: A Survey", Interface (The Computer Education Quarterly), 13(3) 16-22.
7. Thierauf, R. (1988) New Directions in MIS Management: A Guide for the 1990s, Quorum Books.
8. Myers, Isabel Briggs. (1980) Gifts Differing, Consulting Psychologists Press.
9. Thomsett, Rob. (1990 July-August) "Effective Project Teams: A Dilemma, A Model, A Solution", American Programmer.
10. Sherrell, Mary A. (1988, December) "Personalities in the IC", Information Center 26-29.
11. Bush, Chandler M. and Lawrence L. Schkade. (1985, Aug. 15) "In Search of the Perfect Programmer", Datamation 128-132.
12. Mawhinney, Charles H. and Satya Saraswat. (1991, Spring) "Personality Types, Computer Anxiety and Student Performance: An Empirical Investigation", The Journal of Computer Information Systems 101-103.
13. MacIntosh, Norman. (1985) The Social Software of Accounting and Information Systems, Wiley.
14. Riley, Mary. (1990) Corporate Healing, Health Communications.
15. Weizenbaum, Joseph. (1979) Computer Power and Human Reason, W.H. Freeman.
16. Turkle, Sherry. (1989) The Second Self: Computers and the Human Spirit, Simon and Schuster.
17. Covey, Stephen. (1990) The 7 Habits of Highly Effective People, Fireside.
18. Robbins, Anthony. (1986) Unlimited Power, Ballantine.
19. Powell, John. (1985) Fully Human, Fully Alive, Argus.

AUTHOR'S BIOGRAPHY

Eugene Kaluzniacky is an Assistant Professor of Business Computing at the University of Winnipeg in Canada. In addition, he is an instructor in the Information Systems Management Programme in Continuing Education at the University of Manitoba in Winnipeg. He is also a member of the Winnipeg Chapter of DPMA and of EDSIG. His interests are IS curriculum development, analyzing the effect of personality type/learning style in IS education and the role of the Myers-Briggs Personality Type in systems development work.



STATEMENT OF PEER REVIEW INTEGRITY

All papers published in the Journal of Information Systems Education have undergone rigorous peer review. This includes an initial editor screening and double-blind refereeing by three or more expert referees.

Copyright ©1993 by the Information Systems & Computing Academic Professionals, Inc. (ISCAP). Permission to make digital or hard copies of all or part of this journal for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial use. All copies must bear this notice and full citation. Permission from the Editor is required to post to servers, redistribute to lists, or utilize in a for-profit or commercial use. Permission requests should be sent to the Editor-in-Chief, Journal of Information Systems Education, editor@jise.org.

ISSN 1055-3096