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ABSTRACT

          Gaining access to current and high-quality curriculum
resource materials has become more difficult due to escalation in the
prices of textbooks and in rigid interpretations of copyright laws
which limit photocopying. Internet Frequently Asked Questions (FAQs)
and files may offer a partial solution. Originally developed for the
benefit of Usenet newsgroup participants, present FAQs are readily
and freely available to the online community and could supplement
curriculum in a wide variety of disciplines. This paper sketches the
methodology of a study examining the role of FAQs as curriculum
resources in a graduate program in Management Information Systems.
Students were asked to analyze and evaluate the content of several
FAQs, and their comments regarding the files' breadth, readability,
currency, and helpfulness are excerpted and summarized. Three tables
illustrate the results of the study. Also included is a list of
suggested elements and properties of Internet FAQs, including format,
style of presentation, and special features. (Contains 16
references.) (BEW)

The Use of Internet FAQs (Frequently Asked Questions) and
Files as Cost-Effective Supplements to Textbooks
and Substitutions for Photocopies

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ABSTRACT

If curriculum development is to reflect the rapidly changing content of courses that are relevant to our emerged information society, it requires convenient access to quality resources that cover a wide variety of disciplines. Traditionally, gaining access to current and high quality resource materials has been difficult for students and faculty because of issues such as (1) rapid escalation of textbook prices; (2) the increasingly shorter half-life of textbook information, especially in the sciences; (3) declining funds available for purchasing resource material; and (4) increasingly rigid interpretations of copyright laws, placing greater limitations on the use of photocopies as supplements to curricular materials.

Internet FAQs (Frequently Asked Questions) and files are readily available to the online community, covering many topics, with the potential to serve as high-quality resources for curriculum development in many disciplines. This paper examines the role of FAQs as curriculum sources for graduate-level courses in Management Information Systems (MIS).

The results of a study of student perceptions of these Internet curricular sources are presented, along with an empirical model for determining the curricular value of FAQs and files. This paper concludes with guidelines and suggestions on elements and properties of FAQs, as well as the appropriate uses of this curricular resource as a cost-effective supplement to textbooks and curricular materials.

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INTRODUCTION[1]

Background

This study grew from activities (April 1994 and January 1995) to supplement curriculum materials used for graduate-level students in courses in the areas of Management Information Systems (MIS) and Computing Technology in Education (CTE). The motivation for incorporating Frequently Asked Question Files (FAQ) files into these curricula was the desire to offer current information in an expedient and cost-effective manner.

How long have Usenet Newsgroups been operating? Usenet Newsgroups were developed in 1979 when graduate students in North Carolina developed software to exchange messages between Duke University and the University of North Carolina (Dern, 1994). Today, Usenet Newsgroup members and moderators encourage, and some even direct, new users to review FAQ files before submitting questions that may have already been addressed in prior postings. These FAQ files have been archived at various host computers, offering universal Internet access, through the collective efforts of spirited volunteers of the Internet community.

When did Internet FAQ files have their beginnings? In 1983, the first online FAQ file was created to answer recurring questions about the National Aeronautic Space Association (NASA) operations (Hersch, 1995). Usenet Newsgroups, originally composed of a small core of computing professionals and other scientists with common interests, used the electronic discussion format for an open forum for collaboration through computer-mediated communication. These professionals found themselves burdened, as use of the Internet increased, by new newsgroup subscribers who repetitively asked simplistic, however sincere, questions.

To reduce frustrations of veteran users, and avoid unnecessary postings to newsgroups from new users, newsgroup moderators, and other concerned professionals, began to make postings of ad hoc summaries of Usenet Newsgroup online discussion group threads, listing these many repetitive questions and answers in "Frequently Asked Question" files that we currently refer to by their acronym, FAQs. Therefore, as Usenet Newsgroups increased in user sophistication, FAQ files developed.

Motivation for this Study

Of first concern, during activities to supplement the curriculum

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[1] This paper was the basis for a poster session at EDUCOM'95, in Portland, Oregon, on November 1, 1995.

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for graduate-level stu ents in courses in the areas of MIS and CTE, was the time it takes to select, order, and stock course materials for students to purchase. It is not always possible for instructors, especially adjunct instructors, to have sufficient time to locate adequate materials.

Even so, assuming that there is time to secure adequate materials, faculty and students are conce ed about the high cost of textbooks:

- Textbook costs have increased at a rate of 7.2 percent, annually, from 1985 (Campus Marketplace, No. 2164, November 18, 1994; the National Association of College Stores), exceeding the Consumer Price Index by 150 percent.

- The department's 1994 average textbook cost for courses for these students was $51.01.

The problem of cost is furthered by the volatility of information bases, limiting the reuse of less expensive, used textbooks. Even if these less expensive, used textbooks can be re-used, the content that has an increasingly short half-life (Storey, 1992), now requires greater use of supplemental information to maintain currency in course presentations.

Photocopies can no longer be viewed as inexpensive, and legal, supplements to textbooks, evidenced by department meeting discussions on photocopying costs, and copyrights, respectively. Subscription indices show a 7.6 percent annual increase in the price index of periodicals from 1988 to 1995, significantly greater than the increase shown in the national inflation index (Chaffin, 1995; Ketcham & Born, 1994). More specifically, the price index of science and technology serials used in the areas of computer science, information science, and management information science shows a 10.1 percent annual increase from 1988 to 1995 (Chaffin, 1995).

Quality Internet FAQs and files can offer cost-effective solutions to the problems of copyright and increasing textbook, photocopying and periodical costs, for a variety of reasons:

- FAQs are already present in electronic form on the Internet. They are universally and globally available 24 hours per day, assuming the host server that stores the files is functioning. No ordering of files is required, on the part of the instructor or the student.

- FAQs are available to anyone who has Internet access. There are no direct costs for acquiring these text-

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based files. Students can access these files from the dormitory, laboratory, home, work, or vacation site.

- The issue of volatility of information bases has not been a problem with Internet FAQs, so far, due to the fact they are updated frequently. In this study, it was observed that most FAQ files, on the subject of computing, were updated monthly or even semimonthly.

Other faculty concerns relating to curriculum development are legal and copyright restrictions of materials, such as photocopied journal articles. Printed materials that were once freely distributed to students are now packaged into course packets that are sold to students for recovery costs. Issues of "fair-use" notwithstanding, some course packets sold to students for recovery costs were determined to violate copyright laws as evidenced by the well-known Kinko's case in the early 1990s (Turner, 1989; Wagner, 1991; Watkins, 1991).

Understandably, many universities bear the costs of legal access to copyrighted journal articles through payment to the Copyright Clearinghouse Center (CCC), or other commercial course packet developers that pay the CCC. Table 1 summarizes examples of expected costs for a sampling of journal titles in the area of MIS.

Although legal and copyright restrictions related to Internet sources cannot be ignored, in view of the fact that a recent presidential task force has recommended traditional interpretation of copyright law for information transmitted through electronic media (Edupage, September 7, 1995), FAQ files have few copyright restrictions. Most files include statements of copyright release, and, because students access the files directly, copying files or working within the restrictions and time-delays of a clearinghouse are no longer issues.

The issue of availability of materials that related to the curriculum was, however, of particular concern to this study. For the area of MIS microcomputer applications, at the graduate level, there was no acceptable textbook at the time of the courses. Assuming enough time for adequate course development, journal articles, as course packets, could have formed the basis for course materials, but because these classes were also distance education courses, students would not have had time to make interlibrary loan requests that take from 24 hours to months to receive.

Table 1

Copyright Charges ($ U.S.) of Selected Journal Titles

Journal Title	Base Fee	Per Page Fee	10-Page Article Fee
Advances in Information Systems Science (1969-1995)	5.000	0.50	10.00
Algorithmica: An International Journal in Computer Science	8.000	0.00	8.00
American Society for Information Science (1987-1995)	0.000	0.75	7.50
Annual Review of Information Science and Technology	0.000	1.25	12.50
ARIST 28: Annual Review of Information Science and Technology	3.000	0.50	8.00
Communications of the ACM (1994-1995)	3.500	0.00	3.50
Database Management in Science and Technology	0.000	1.25	12.50
Journal of Management Information Systems (1984-1995)	9.500	0.00	9.50
Management Science (1954-1995)	1.250	0.00	1.25
MIS Quarterly	0.500	0.05	5.50

Source.   The Center for Copyright Clearinghouse, URL <http://www.copyright.com>, October 23, 1995.

Assuming adequate budgets and legal permissions to use copyrighted materials, the traditional model of using paper-based journals, texts, and other physical references also assumes students have campus-based access to a physical brick-and-mortar library. Academia's entry into a digital world challenges faculty to structure the practice of curriculum development around physical holdings in a campus-based resource, such as the library. Fortunately, the concept of use of electronic sources, such as FAQs and other files, is beginning to rise to this

challenge.

<div align="center">FAQ Depth and Breadth</div>

Although topics relating to MIS were stressed for this study, a search found a wide-range of FAQs relating to a great many subject areas. Table 2 is offered as a sampling of the many subject areas covered by Usenet Newsgroups.

<div align="center">Table 2</div>

<div align="center">Examples of Variety of Subject Areas of Usenet Newsgroups</div>

Hierarchy	Area of Interest	Number of Newsgroups at panix.com
alt	Alternate Topics alt.yoga	627
comp	Computing comp.lang.cobal	162
misc	Miscellaneous Areas misc.business.consulting	47
news	Usenet News news.announce.newusers	4
rec	Recreation rec.music.opera	173
sci	Non-Computing Science sci.bio.botany	32
soc	Social Issues soc.culture.irish	48
talk	Debates talk.philosophy.humanism	5

Note.   Data are accurate for the Usenet Newsgroups that were available at the host computer panix.com on August 4, 1995.

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Student Access to FAQ Files

Recalling that FAQs grew out of Usenet Newsgroup summary postings, it is important to note that as of the date information was collected for Table 2, August 4, 1995, the host computer at panix.com offered access to 1,518 Usenet Newsgroups. Agreeing that there exists a bountiful supply of Internet FAQs, the issue of actual access requires that students have adequate computing resources for accessing and using Internet FAQs and files.

Unfortunately, the existence of an online account, by itself, does not student access. Because of the tremendous file size of many of the FAQs (as much as 500K) and the lack of student quota at some university systems (as little as 5K), students must have access to, and be able to work in, the online temporary directory so that memory and quota are not problems. Some university computing systems refer to the temporary directory as the "scratch" directory.

At this point there is a variety of FAQ file content issues that must be considered by faculty. For the purposes of this study, those issues were limited to the following: dates and timeliness of information, depth and breadth of content, student perceptions of the FAQ medium, and methods of evaluating FAQ files for quality and applicability.

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METHODOLOGY

FAQ file indices were located, browsed, and reviewed prior to the designation of FAQ file pathnames that were appropriate sources of study. These steps are detailed.

The file transfer utility, ncftp, was used to access Massachusetts Institute of Technology's (MIT) host computer, bloom-picayune.mit.edu. A chief benefit of using ncftp, as opposed to the more commonly used ftp utility, is that the user can use the UNIX® "more" command to view files to determine whether they are useful, before using "get" to transfer the file.

Next, having determined that "Index-byname" was a comprehensive listing of the names and pathnames of over 21,000 FAQ files stored at bloom-picayune.mit.edu, the ncftp "get" command was used to obtain "Index-byname" (URL <ftp://bloom-picayune.mit.edu/Index-byname>). This extensive index provided the pathnames for an exceptionally wide variety of FAQ files that had potential use in the MIS curriculum. The resources that are listed in "Index-byname" are available at bloom-picayune.mit.edu to anyone with Internet access.

The next interest was to determine the curricular value of these FAQ files and to assess their potential use in the curriculum. The UNIX® utility Writers WorkBench was used for analysis of text readability and quality for each reviewed FAQ file. Having made preliminary evaluations of the files for the course, and having prior knowledge and experience using the files for reference and research purposes, students were required to review the file URL <ftp://bloom-picayune.mit.edu/Index-byname> and, as a course assignment, review and critique ten FAQ files.

RESULTS

Student Perceptions

As one of five course assignments, students of the Fall Term 1994 and Spring Term 1995 course MMIS 626, Application of Microcomputer Systems, were required to choose and critique ten FAQ files related to a particular computer topic of their interest. Assignments were submitted electronically, facilitating the later compilation of critiques into one common electronic file. This common file of students' contributions was analyzed, using content analysis (Weiss, 1970), for positive, neutral, and negative comments.

A Oneway Analysis of Variance (ANOVA) was used to determine that there were significant differences ($p \leq .05$) in the number of positive comments (Mean = 72.4) and the number of negative comments (Mean = 24.9) offered by students for ten FAQ files. Results of the Oneway ANOVA are summarized in Figure 1.

Positive	Neutral	Negative
Mean = 72.4	Mean = 35.4	Mean = 24.9
SD = 43.3	SD = 28.1	SD = 11.1

$$F \text{ Ratio} = 5.358$$
$$F \text{ Probability} = 0.013$$

Figure 1

Content Analysis of Student Perceptions of FAQ Files

Typical student comments on the value of FAQ files as a reference source included the following:

> This file was written for the competent engineer, manager, and administrator. Although the sections form an organized progression from start to finish, they are sufficiently self-contained [in] that the file can also be used as a reference guide when the reader needs information on a particular subject.

> I believe that this FAQ gave me a strong background regarding the client/server computing that might be necessary for my future professional needs!

Both files extremely well organized. The information on NT
seems very up-to-date. These folks should get the Internet
Medal for effort up and beyond. The process is really quite
simple. I used my Norton Desktop Editor because it loads
quicker and I'm only dealing with ASCII files. It takes a
little bit to find the "hit" string. I first tried "win"
for the windows search -- do you know how many files there
are on "wine?"

The FAQ is updated frequently and answers the correct
questions of interest for the subject of interest. The FAQ
has a directory but does not have it subdivided into
categories. However, with the small number of questions (32)
it is not difficult to find your way. The questions are
numbered for easy searching. The FAQ has an abundance of
references and telephone numbers.

This FAQ should be required reading for anyone thinking
about using the Internet in a business environment. And
this movement has already begun in earnest. As stated in
the Official Internet Yellow Pages: "There are far-reaching
opportunities that have been set in motion by the recent
opening of the Internet information highway to commercial
use. Businesses can research new markets and keep a better
pulse on existing ones, increase their level of direct
customer contact and customer feedback, make new business
contacts, and get instant feedback via electronic mail from
internal staff and customers alike."

Although it is one of the largest files that I reviewed
(87,433 bytes), I did not feel that it contained any
unnecessary information. In my opinion, the document is
organized in a very easy to follow structure. The sections
are written is such an order that even a person who is not
familiar with the subject can follow the flow and understand
what a computer virus is all about.

This document ranks as one of the better ones I've seen. I
copied [it] to all my staff members. It is technically
correct as far as my experience can determine and it is well
organized. I would have appreciated some categorization or
cross reference of the questions so I could zoom in on
particular items of interest, but it is still a very
valuable document.

Noting that the FAQ was not an end in itself, it gives the
reader many other sites to explore. It also gives a good
representation of companies that are good sources of CDs.

The FAQ provided interesting information concerning

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protocols, but did not discuss what they are. A discussion on protocols would have been a good introduction to the presentation of the different types. The author also provided basic information concerning when the various protocols should be used. The information presented could have been expanded and better organized. Generally, the information presented is useful, but further investigation by the user would be necessary.

The date and time formats should be standardize[d] - there are too many variations, which can easily lead to misunderstanding (i.e. 1994/02/08, 02 Oct 1994, November 6,1994, and 1994.02.08). The header information should be the same (i.e. location / position and formats) in each file. There should be something said about each person that maintains the data (i.e. name, qualifications, and etc).

This FAQ provided just a small peek into this complex area of study. But this should be a sufficient starting point for most casual users. It provided detailed answers to the most basic of questions. And while I enjoyed reading about citation form, I would have preferred the rest of the FAQ to have been brought down to a more user-friendly level.

This variety of comments reflects the content knowledge and experience of working professionals in the area of MIS.

<u>Curricular Assessment of FAQ Files</u>

Based on the positive acceptance of FAQ files by graduate-level students, all of whom have practitioner experience in MIS, an empirical assessment was conducted to determine the curricular value of each Internet reference source used. Evaluative focus was placed on:

- file length (number of printout lines)

- file size (measured in kilobytes)

- readability, as measured by the Kincaid Readability Scale

- recency of update

- text complexity based on sentence variation, as measured by Writer's WorkBench (wwb)

To offer a sense of the value and utility of each FAQ file for appropriateness in the MIS curriculum, holistic review of FAQ content and accuracy was restricted to areas of expertise.

Results of this assessment for three sample FAQ files, collected on August 5, 1995, are presented in Table 3.

Table 3

Curricular Assessment of FAQ Files: File Pathname, Recency, Size, Length, Kincaid Readability Scale, Sentence Variation, and Summary

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File 1:

URL: <ftp://bloom-picayune.mit.edu/pub/usenet-by-group/
comp.answers/client-server-faq>

Last update . . . . July 20, 1995
Size 41K
Length   . . . . 902 lines
Kincaid Readability Scale . . . . . . 15 Years of Education
Sentence Variation   . . . . 65% Simple, 21% Complex

This FAQ file would serve as an excellent introduction to the nature of a client-server relationship in computing. It is easy to read and very descriptive in the use of understandable metaphors. It certainly would not replace a college-level text book, but it could serve as a useful introduction to the topic of client-server usage in computing.

File 2:

URL: <ftp://bloom-picayune.mit.edu/pub/usenet-by-group/
comp.infosystems.www.browsers.misc/Amiga_Mosaic_&_WWW_
Frequently_Asked_Questions_(FAQ)>

Last update . . . . July 26, 1995
Size 11K
Length . . . . 220 lines
Kincaid Readability Scale . . . . . . 15 Years of Education
Sentence Variation   . . . . 65% Simple, 21% Complex

This FAQ is highly technical, uses computing jargon, and is specific to one software product. This file offers an excellent summary of information for students who can comprehend the technical nature of the file and who need exposure to this product.

File 3:

    URL: <ftp://bloom-picayune.mit.edu/pub/usenet-by-group/alt.
    politics.economics/Government_Information_on_the_Internet_
    (1_4,_Gumprecht)>

    Last update . . . . August 3, 1995
    Size 56k
    Length . . . . 4,275 lines
    Kincaid Readability Scale . . . . . . 16 Years of Education
    Sentence Variation . . . . 79% Simple, 10% Complex

    This FAQ is an excellent reference about online government
    sources of information, useful to students in all
    disciplines, that rivals commercial printed materials.
    References are identified in an easy to understand format,
    and the file is still current on most issues, even though it
    is now a year old.

Source of FAQ Files.   URL: <ftp://bloom-picayune.mit.edu>,
                          August 5, 1995.

SUMMARY

Internet FAQs and files have the potential to serve as rich sources of supplementary information for class materials, directly linking current information to the curriculum. In this study, graduate-level MIS students, with extensive practitioner experience, offered positive reaction to the value of these files, as demonstrated by content analyses of the file critiques they produced. FAQ files were found to have high content accuracy in the disciplines related to student and faculty areas of expertise.

Quality Internet FAQs and files, used as cost-effective alternatives to costly photocopies and textbooks, require consideration of the following:

- a direct link of current trends to the curriculum

- high content accuracy

- recency and timeliness

- depth and breadth of content

- positive student perceptions of the question and answer format of the Socratic method, as well as acceptance of the content of this medium

- ASCII-only text format of Internet FAQs and files

- faculty and student need for sufficient disk quota and electronic work space for electronic file storage

Final suggestions and considerations for the instructor who is considering incorporating Internet FAQs and files into the curriculum include the following:

(1) Before teaching a lesson, obtain and review the FAQ index and keyword search on your topic to see if there are related FAQ files.

(2) Review the FAQ file content for new information.

(3) Based on your area of expertise, judge the FAQs and files for content, educational value, reading and application levels.

(4) Use evaluation tools, such as Writers WorkBench or Grammatik, to verify that the writing style and readability level is appropriate.

If appropriately used, FAQs and other files can serve a variety of informational needs, including:

(1)   current applications of information;

(2)   introductory sources of information;

(3)   original sources of information;

(4)   references materials;

(5)   remedial sources for content;

(6)   supplements to textbooks; and

(7)   updates of subject knowledge.

A detailed listing of considerations for the use of FAQ files as cost-effective supplements to textbooks and substitutions for photocopies is attached to this report.

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ATTACHMENT

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Suggested Elements and Properties of FAQs

Format
logical, simple, well-structured
question/answer format
use of white space

Table of Contents
categories or groups of questions
logical format and structure, e.g., Yellow Pages
simple format

FAQ Information
copyright information
name and e-mail address of author
qualifications of author
disclaimer of author
dates and frequency of update
number of lines/pages
consistent header information (location/position)
use of standard date and time formats

Introduction
declaration of targeted audience, level of interest
definition of subject and scope
statement describing background level of reader
statement of reading time requirements
summary of changes, sections, and features

Features
acronym explanation
addresses (physical and electronic) for products
cross-references within faq for "hyper-text"
definitions
flagging of items for completeness and newness
glossary for non-techies
index of cited books, periodicals, reviews, etc.
legal citations
links to other sources
list of electronic addresses of references
list of Internet sources and newsgroups
lists of references for research
list of technical terms
lists of vendors
posting guidelines
product data, prices, and reviews
references to government policies
telephone numbers for references
troubleshooting tips
vendor reviews

Content
appeals to different reader levels
appropriate depth of discussion
appropriate length of FAQ
background information on subject
balance of question/answer levels
broad base of knowledge
comparison/contrast of subject elements
comprehensiveness
conciseness
credibility
currency of information
description of current issues
description of problem
detailed answers and information
direction to software sources
discussion of protocols
easy to follow
elaborate enough in content
exact and explicit in wording
expanded information
explanation of technical information
explanations of jargon and abbreviations
extensiveness of questions
flow of information
general understanding
greater use of glossary for explanation
"hands-on" information
helpful examples and hints
humor
inclusion of pro's and con's in discussions
information from working professionals
informative
logical pattern and progression of information
monitor amount of information
no confusion, fluff, hype, repetition
not too technical
objective, not slanted
objective towards products
objectively phrased questions
practical
preventive maintenance information
questions of quality and relevance
relevance to work environment
reliable information
research information on changes in trends
solutions and sources for solutions
straight-forward
strategies to remedy issue at hand
timeliness
use of FAQ to inform and train
useful as preparatory material
user-friendly level
variety of topics
"weighted" information

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