WEBNET CIRCULATION SYSTEM:
AN EARLY USE STUDY

Lucy Te-Chu Lee*

I. Introduction

There are "older" and "more recent" views of the circulation function stated by Barbara Markuson in her 1975 Library Technology Reports study of automated circulation control systems. The "older" view was that circulation control centered conservation of the collection and recordkeeping; the "more recent" view encompasses "all activities related to the use of library materials."1 Circulation services, as described by Freedman, involve that function which is ultimately one of the most fundamental: "the satisfactory bringing together of the library user and the materials sought by that person."2

Over the years, the increase in library collections, workloads, and library services overwhelms traditional manual library systems, and causes libraries to turn to more efficient means—automated systems. Similarly, when the total number of annual circulation transactions reach/over 250,000, the manual circulation system must be replaced by other modern methods, computerized systems, in order to handle and manage them effectively. In addition, there are many libraries with manual circulation systems able to support their work loads, which also considered automation, often in the belief that it will result in cost savings.3

In 1978, the Association of Research Libraries (ARL) conducted a survey of more than one hundred of its members on using automated circulation systems. Of sixty-seven questionnaires returned, thirty-seven libraries use automated circulation systems. Half of these systems were custom-developed in-house systems,

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and half of them were using commercial vendor systems. The majority of all the systems were batch processing, or partial online applications.\textsuperscript{4}

With the advent of minicomputers in 1970s, the turnkey market of circulation systems, using the capabilities and special characteristics of the minicomputers, have increased remarkably. It was estimated the gross value between 1970 to 1976 was 10 million dollars. In the single year of 1977, sales totalled 10 M. dollars, the gross one-year revenue from July 1, 1980 to June 30, 1981 was in excess of $25,000,000. The number of turnkey circulation systems that are scheduled to be installed in 1981 was 75, and the total number of installed turnkey circulation systems is 301.\textsuperscript{5}

Evidently, the present integrated library systems, library consortia, and networks have long shown an interest in automation of circulation. And also some of the integrated library systems were developed from the existed circulation systems such as the Library Control Circulation System (LCS) of Ohio State University. For an integrated library system, the “total system approach”, information about the status of an item, from the time it is ordered, is processed by technical services, is put on the shelf, and has been checked out by a patron, is available to one and all in one central data base. For library cooperatives, a central circulation system provides a mechanism for resources sharing, especially when cooperating libraries are in geographic proximity. In addition, it has been reported that the greatest benefits from the automation of functions besides cataloging have been those that have shared an automated circulation control system. This is particularly popular among the cooperated automated programs of public libraries, such as, the North Suburban Library System in Metropolitan Chicago, and several hundred public libraries in Illinois, Connecticut, and other states have installed similar shared automated circulation system.\textsuperscript{6, 7}

In the network environment, a network-supported circulation system will have the potential for integration of circulation with
other shared network functions. Thus, many networks are presently developing and planning their circulation subsystems, such as, OCLC, WLN, etc. Of course, there are also networks that have installed their automation circulation systems, such as the WEBNET (Western Pennsylvania Buhl Network) circulation subsystem. It is the intent of this paper to study the early use of WEBNET Circulation system.

II. Purpose of the Study

The intent of this study are threefold:

1). To study the early use of the WEBNET circulation system by the Carlow College library personnel.
2). To collect suggestions and comments from the library personnel for possible improvement of WEBNET circulation system, and
3). To learn the operations of WEBNET circulation system by the investigator.

III. Methodology

Two methods are used:

1). A questionnaire was administrated to the library personnel who have learned the use of WEBNET circulation system. (the instrument is included in the appendix)
2). To observe the circulation personnel at work and to discuss with them about the problems of the circulation system.

IV. WEBNET Circulation System Development

WEBNET was initially developed by the Office of
Communication Programs (OCP) at the University of Pittsburgh in 1975, and it was planned as a demonstration-pilot operation of a full library service and resources sharing network in Western Pennsylvania by linking six libraries in the Pittsburgh area. They are California State College, Carlow College, Chatham College, Point Park College, University of Pittsburgh, and Westminster College. Kent stated that "the chief objective of the WEBNET has been to develop a pilot project which would demonstrate how a full-service regional resource sharing network would operate and to make a close study of the costs..." In the original proposal, the services provided by the network are acquisitions, cataloging, inter-library loan, mail, reporting, and a public-access online catalog. It was lacking a circulation function in the network, and it was soon realized that "a regional network will not be considered economically viable without the [circulation] function." Therefore, a second proposal was proposed to the Buhl Foundation in 1980. There are two structural alternatives for automating circulation control in a networking environment, for WEBNET, it was decided the decentralized approach should be used. That is the storage of patron and item data at each library, accessible via terminals from any other libraries through the central computer.

Two participating libraries are selected as the test sites for the circulation system. The first circulation system was installed at Carlow College library in late August 1982. The circulation system was officially opened to the public on October 12, 1982. The hardware installed at the Carlow College library were: a microcomputer DEC PDP 11/23 (256 KB), a printer, a Bar Code Reader, Z19 Terminal, and a Modem. The data stored in the microcomputer are the Patron File, the Item Bar Code File, and the Temporary (Demo.) File. The total collection in the system for Carlow College library are 63,000 items.
V. An Idealized Circulation System

Boss in 1979 *Library Technology Reports* stated that an ideal circulation system should be able to do the following:

1. Permit the library staff to quickly determine that a patron is eligible for service, what his or her privileges are, and at what address he or she can be reached.
2. Permit the library’s patrons and staff to quickly determine what titles are in the library’s collection and where they are located.
3. Enable the staff to quickly and efficiently charge and discharge library materials, and to keep accurate and current records of these transactions.
4. Permit the library patrons or staff to quickly determine what is currently in circulation and when it is or was due back.
5. Produce overdue and recall notices, and permit the library staff to quickly determine what notices have been sent to patrons with materials charged out and what action is next to be taken.
6. Place holds on items, and permit library staff to quickly determine what titles are being held for patrons, for whom they are being held and after what date the materials are no longer wanted.
7. Provide management information on the utilization to aid in staff scheduling, collection weeding and storage, and acquisitions.
8. Accommodate dramatic increases in collection size, number of users, number of transactions, or number of locations without major system redesign.

Boss also developed a list of desirable circulation features, they are:

1. Response time averaging two seconds or less for charges and
discharges.
2. Response time of five seconds or less for simple inquires by author or title.
3. Ability to sort three classification schemes (LC, DC, other).
4. Ability to sort in call number and display or print.
5. Maximum response time of eight seconds or less for subject inquires.
6. Ability to distinguish multiple volumes and multiple copies of the same call number to permit specific access.
7. Ability to handle up to twenty types of patron.
8. Ability to charge materials to specific carrels or offices for in-building use.
9. Ability to set variant-length loan periods and reset when necessary.
10. Ability to override loan period.
11. Identification of restricted or blocked borrowers during charge-out.
12. Immediate updating of the data base including immediate call number access and access to holds.
13. Ability to place holds on items and notify patrons of their availability, including the capability of producing a list of holds in call number.
14. Ability to produce a report on hold queues that exceed a specified number of copies.
15. Ability to adjust the hold queue.
16. Capability of easily posting holds against all circulating copies of a multicopy item or only against specific copies.
17. Easy, regular preparation of overdue notices, recall notices fine notices and replacement bills in background rather than overnight.
18. Ability to produce a list (dummy run) in call-number order of all books for which overdue notices are schedules to be sent.
19. Access to information concerning materials charged to an individual borrower by the borrower’s name.
20. Ability to access patron accounts for current and past fines.

Reserve Functions

1. Ability to charge book to linked course/faculty member.
2. Ability to circulate books for an hourly, overnight, daily, weekly, or other loan period from course/faculty member to other patrons.
3. Ability to place holds on reserve books.
4. Ability to fine books on an hourly basis.
5. Ability to generate overdue notices daily.
6. Ability to generate course/faculty directories.
7. Ability to trace book to course/faculty member through item query.
8. Circulation statistics for the number of times each item was borrowed, tied to course/faculty member.

Management Information Functions

1. The production of circulation statistics by time of day, week, month, or year — including ability to cumulate.
2. Ability to measure collection demand by classification number — including both loans and recall requests.
3. Identification of frequently demanded titles — including both loans and recall requests.
4. Identification of infrequently circulated titles.
5. Circulation statistics by borrower type.
7. Circulation statistics by computer terminal.

Training Program

1. Designed to facilitate ease of operation so that up to 100 people can be trained to use the system.
2. Formal training program by vendor as a part of the standard
contract.
3. Staff manual provided.
4. Patron-orientation materials provided.

Flexibility of System

1. Ability to increase the item file to 2,000,000 items without replacement of hardware or software at added cost.
2. Ability to increase the patron file to 500,000 without replacement of hardware or software at added cost.
3. Ability to increase the number of terminals to more than 100 without replacement of hardware or software at added cost.
4. Ability to extend to remote locations.
5. Ability to "network" with other circulation systems of same vendor.
6. Ability to "network" with other vendors' systems.¹¹

The above lists are very useful references for libraries to plan, design, or purchase a circulation system.

VI. System Capabilities of WEBNET Circulation System

WEBNET circulation system is a very sophisticated system, which can perform many circulation functions that are normally can not or will take a long time to do it manually. The major functions of WEBNET circulation system are:

1. Lend/return items to legitimate patrons.
2. Add items to and remove items from the general circulating collection.
3. Transfer items from the general circulation collection to the reserve collection or transfer items back.
4. Add or remove personal copies and photocopies to/from the reserve collection.
5. Retrieve bibliographic information from the VAX concerning
any item in the general collection and a skeleton bibliographic record from the circulation computer for any item in the reserve collection.

6. Determine who has a borrowed item, and put a reserve note, and notify the requested person when item returns.

7. Record lost items, if lost by a person be able to input the cost of replacement on the patron's record.

8. Record damaged item.

9. Return a 'lost' item to the collection.

10. Retrieve information concerning any item in the collection whether in the library, in circulation, lost, damaged, etc.

11. Calculate fines on overdue items based on the length of time the items are overdue and the status of the patron.

12. Attach all fines on overdue items and/or lost items to the patron responsible for the violation.

13. Recall an item borrowed for reserve.

14. Establish limits for the number of items a patron can have in his/her possession, and the maximum amount of money that can be owed — a patron passing either of these automatically loses borrowing privileges.

14. Add and delete patrons both individually or in groups.

15. Create reports and send out overdue notices.

16. Waive fines for lost or overdue books.

17. Collect fines either in entirely or only in part.

18. Create a list of lost items.

19. Send periodic the follow-up notices.

20. Renew an item already on loan.

21. Detailed circulation statistics related to library usage by various types of patrons and materials can be generated from the WEBNET statistics package.

22. Other capabilities will add to the system when needed.
VII. Questionnaire and Observation Results

Thirty-eight questionnaires were administered to the library personnel at the Carlow College library. Selection criteria were: all library staff and the circulation staff. There are nine library staff and their questionnaires were administered and collected by the Library Director. Twenty-nine student aide questionnaires were administered and collected by the Head of the Circulation Department. The results were analyzed and tabulated on p. 173–176. Major reactions to the use of WEBNET circulation system are the following:

1. 35, or 93%, out of 38 library personnel surveyed indicated the system is easy to use.
2. 71% of the library personnel prefer the automated system over the manual one.
3. 29 (76%) library personnel would like to recommend the circulation system to other libraries.
4. 70% of library personnel are capable of using most of the system commands.
5. All agreed that “hand-on” experience is very important.
6. Some of the commands take too many steps.
7. System downtime was mentioned in several questionnaires.
8. Sometimes it was difficult to wand the bar code.
9. Circulation Manual should be stated and explained in simple language terms. 17 of the personnel commented the manual was helpful to them, 6 indicated very helpful, and 7 indicated it has no help at all. Command steps should be more clearly stated and explained; too much computer jargon is used in the manual.
10. One person’s comments on the manual “Burn it!” It seems that this is not a valid answer, because in her other answers to the manual, she said that the manual is clear, easy to use, and helpful!
11. An “English Language Index” for the manual was suggested by the Library Director.
12. A record of the problems of the system was kept (only for the first three weeks).

13. 4 of the library personnel indicated that they learned to use the system by the circulation manual, 11 learned it from others, and 22 learned the use of the system by the combination of above methods.

<table>
<thead>
<tr>
<th>Library Personnel Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Library Staff (9)</td>
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<tr>
<td>-------------------</td>
</tr>
<tr>
<td>Total Number Surveyed</td>
</tr>
<tr>
<td>Total Number Returned</td>
</tr>
<tr>
<td>Full Time</td>
</tr>
<tr>
<td>Part Time</td>
</tr>
<tr>
<td>Circulation Desk Personnel</td>
</tr>
<tr>
<td>Taken Computer Related Courses Previously</td>
</tr>
<tr>
<td>Knowledge of Using Terminal</td>
</tr>
<tr>
<td>Using Terminal for Present Work</td>
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</table>

* Student Aides Works Schedule: 2–9 hours per week
  27 or 90% of them came to the library to work at least twice a week.
### Circulation System Manual Instruction

<table>
<thead>
<tr>
<th></th>
<th>Library Staff</th>
<th>Student Aides</th>
<th>Total Number</th>
</tr>
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<tbody>
<tr>
<td>Clearly Stated</td>
<td>4</td>
<td>17</td>
<td>21</td>
</tr>
<tr>
<td>Not Clearly Stated</td>
<td>1</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Easy to Use</td>
<td>3</td>
<td>15</td>
<td>18</td>
</tr>
<tr>
<td>Not Easy to Use</td>
<td>2</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Very Helpful</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Helpful</td>
<td>1</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>No Help at All</td>
<td>1</td>
<td>6</td>
<td>7</td>
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</tbody>
</table>
### The Use of Automated Circulation System

<table>
<thead>
<tr>
<th>Learning Methods:</th>
<th>Library Staff (9)</th>
<th>Student Aides (29)</th>
<th>Total No. (38)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circulation Manual</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Taught by Others</td>
<td>2</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Both (Above) Methods</td>
<td>3</td>
<td>19</td>
<td>22</td>
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</table>

### Use of Circulation System:

<table>
<thead>
<tr>
<th></th>
<th>Library Staff (9)</th>
<th>Student Aides (29)</th>
<th>Total No. (38)</th>
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<tbody>
<tr>
<td>Complicated</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Easy to Use</td>
<td>7</td>
<td>28</td>
<td>35</td>
</tr>
<tr>
<td>No Comment</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

### Prefer the Automated Circulation System over the Manual One:

<table>
<thead>
<tr>
<th></th>
<th>Library Staff (9)</th>
<th>Student Aides (29)</th>
<th>Total No. (38)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>6</td>
<td>21</td>
<td>27</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Not Sure</td>
<td>3</td>
<td>6</td>
<td>9</td>
</tr>
</tbody>
</table>

### Recommend the System to Other Libraries:

<table>
<thead>
<tr>
<th></th>
<th>Library Staff (9)</th>
<th>Student Aides (29)</th>
<th>Total No. (38)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes (66%)</td>
<td>6</td>
<td>23 (80%)</td>
<td>29 (76%)</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Not Sure</td>
<td>3</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Commands</td>
<td>Library Staff (9)</td>
<td>Student Aides (29)</td>
<td>Total No. (38)</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-------------------</td>
<td>-------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Checkout</td>
<td>7</td>
<td>29</td>
<td>36</td>
</tr>
<tr>
<td>Return</td>
<td>6</td>
<td>27</td>
<td>33</td>
</tr>
<tr>
<td>Renew</td>
<td>4</td>
<td>22</td>
<td>26</td>
</tr>
<tr>
<td>Fines</td>
<td>3</td>
<td>22</td>
<td>25</td>
</tr>
<tr>
<td>Display Patron (d p)</td>
<td>5</td>
<td>24</td>
<td>29</td>
</tr>
<tr>
<td>Display Item (d i)</td>
<td>5</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Display Patron Items (d p i)</td>
<td>5</td>
<td>18</td>
<td>23</td>
</tr>
<tr>
<td>Display Item Owner (d i o)</td>
<td>4</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Renew by Phone</td>
<td>2</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Not Comment</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Suggestions and Comments

(Direct quotes are taken from the returned questionnaires)

The System

- It is a very easy system.
- Get it (system) to work so it doesn’t break down.
- It is often hard to wand the bar code for student I.D. and the book because it gets worn down and the scanner can not pick up the code.
- The computer goes down often and books can be checkout, they are written up but must be put into computer later, and they can not be returned either (books could be shelved must wait).

The Circulation Manual

- An “English language index”; for example: User’s question: Who has this book out? Command: display item owner (d i o).
- It needs a clearer explanation.
- Use simple terms.
- Simpler terms the words and understanding are unclear and difficult.
- For individuals who only function to check books in and out etc. the procedures are too lengthy – it would be easier to have those required by this position specifically laid out.
- For command f (fines), it isn’t cleared about waiving a fine and when it should appear on the screen.
- The steps could be stated in more simple terms.
- It is often difficult to undertand/steps are sometimes skipped/language not clear.
- You need to practice not just read a book.
- I think it is very explanatory.
- Burn it!
VIII. Suggestions and Conclusions

Perhaps it is too soon for this type of questionnaire survey, but because of the time limitation of the investigator, the survey had to be conducted at this time. It is strongly recommended by the investigator that there should be further studies and evaluations of this circulation system in the future. From the questionnaires and personal observations of the system, the following are recommended:

1. The system downtime should be recorded with the reasons for it in order to test the system reliability.
2. A record of the number of transactions during the system downtime should be kept. This is an important factor to measure since a comparison of these transactions against the total transactions could be made if the data was available.
3. All the recommended changes to the system by the personnel should be recorded.
4. A list of "don’ts" should be provided by the system person for the circulation system operators.
5. The command steps used to locate the desired information should be 1~2 steps and no more than 3 steps.
6. The present data in the patron file is inconsistent and incomplete; it should be thoroughly checked and up-dated especially the data which was used to print patron’s address which was used for sending the overdue notices.
7. Circulation manual should be explained in simple language terms; more examples should be given and in regular size for easy reading.
8. It would be desirable to have more library staff members with a thorough knowledge of the system as backups.
9. The library should reconsider its policy concerning waiving fines since it cost more staff time to waive fines online.
10. A training program should be developed for the student aides and library staff; it would appropriate to have formal
instruction in the new automated system.

11. Better communication is essential. Everyone in the library should be informed of any new changes and/or corrections made in the system.

12. It is felt desirable that the call number and author of an item should be made directly searchable in the circulation system. Now one has to switch to the Public Service Version of WEBNET in order to locate the information.

13. It is strongly recommended that the use of commands in the circulation system should be monitored by the system in order to establish the possible standard specifications for an ideal circulation system in a network environment.

14. The investigator also strongly recommends that further studies on this system should be conducted in the near future. To study not only the use of the circulation system but also the benefits and cost-effectiveness of the automated circulation system in comparison with the manual system.

In conclusions, this investigator believes that an ideal circulation system is related to the individual library’s needs. There are three major variables in the circulation system: the specification requirements established to meet local needs, the system design factor (how easy is the system to use), and the human factor (staff acceptance of the system).

In the recent March-April 1982 issue of Library Technology Reports on “Automated Circulation Control Systems” Boss concludes “a system is only as good as the way in which it is implemented and controlled, . . . the installation of an automated circulation system does not absolve the administrator of the responsibility to manage and monitor the performance of all resources—human, materials . . . machine, [and money],”¹³ and it should enhance the efficiency of library management.

Acknowledgements: The author is grateful for the cooperation of Mrs. Joan Mitchell, library director of Carlow College, as well as the library staff, without whose cooperation this research could not have been done.
References

Appendix

The purpose of this questionnaire is to obtain general information about your newly installed automated circulation system in terms of its usage activities, such as how well the system was accepted by the patrons and the library staff especially, what are the difficulties, and your suggestions for the system improvement. Please answer the questions as accurately and objectively as possible, if you can not answer some of the questions, please leave them blank.

1) Respondent’s title: ____________________________

2) Length of time in current position: _____________

3) Length of time employed by library: ______________

4) Do you work in the library: Full time_____ Part time_____

5) Do you work at the circulation desk: Yes_____ No_____

6) Are you aware of your library having an automated circulation system?
   Yes_____ No_____

7) If you work at the circulation desk, how many hours per week do you work there? ______ hrs.
   Which day(s) of the week, please circle: M. T. W. TH. F. S. Sun.

8) Have you taken any course relating to computers: Yes_____
   No_____

9) Have you used a computer terminal before: Yes____ No_____

10) Do you like machines: Yes____ No_____

11) Are you using a terminal for your present work (please do not include the terminal at the circulation desk):
    Yes____ No_____

12) Did you have any training on how to use the circulation system: Yes ____ No ____ How many hours of training ____ hrs.

13) How did you learn to use the circulation terminal:
Self-learning ____ Taught by others ____ Not learned yet ______

14) Did you learn the use of circulation system by following the Circulation Manual?
   Yes ____ No ____ Or
   by others ____ Both ______

15) Do you think the Circulation Manual instructions on how to use the circulation system are clearly stated: Yes____No____
    and easy to use: Yes____No____

16) Do you think the Circulation Manual is:
    Very helpful ____ Helpful ____ No help at all ______

17) Any suggestions for the Circulation Manual please:
    __________________________________________________________________________
    __________________________________________________________________________

18) Do you think the circulation system is easy to use:
    Yes____ No____

19) Do you like the automated circulation system better than the manual one:
    Yes____ No____ Not sure ______

20) Do you think “hand-on” experience is very important:
    Yes____ No____

21) Do you know how to use most of the commands of the circulation system:
    Yes____ No____

22) Do you know how to use the following commands:
   Checkout ____ Returns ____ Renew ____ Fines ______
   Display patron (d p) ____ Display item (d i) ______
   Display patron item (d p i) ____ Display item owner
   (d i o) ____ Renew by phone ______

23) Did you find some of the commands are not very easy to use:
    Yes____ No____ Which ones____________________

24) Did you report or record the problems that you have with the
system:

Yes___ No___

25) Do you think this circulation system is too complicated for you:

Yes___ No___ Not sure___

26) Would you recommend this system to other libraries:

Yes___ No___ Not sure___

27) Any more suggestions and comments: ______________________

__________________________

Many thanks for your kind cooperation and assistance.