

LRU



THE UNIVERSITY OF LANCASTER LIBRARY RESEARCH UNIT

SIMULATION KIT NO.1

A LIBRARY MANAGEMENT GAME
(Loan and Duplication Policies)

025

63007

ISBN 0 901699 19 5

63007

- 1 -

UNIVERSITY OF LANCASTER LIBRARY RESEARCH UNIT

SIMULATION KIT NO.1.

Contents

This kit contains the following items:

1. List of contents.
2. Introduction to the Game.
3. Game Editor's manual.
4. Set of reports by "Market Research Ltd."
5. Returnable agreement for supply of computer programs and full documentation.
6. Sample "participants input form" (Enclosure A).
7. Sample "Game Editor's input form" (Enclosure B).
8. Loan period conversion table. (Enclosure C).
9. Sample print-out of results. (Enclosure D).
10. Key to computer print-out. (Enclosure E).
11. Bibliography



THE LIBRARY



S. N. D. T.
WOMEN'S UNIVERSITY
BOMBAY.

22 APR 1976

SIMULATION KIT No. 1

Introduction

This kit contains all the information required to run the University of Lancaster Library Management Game (Loan and Duplication Policies). Readers who are unfamiliar with this Game are recommended to read one or more of the Library Research Unit's relevant publications (which are listed in the bibliography which will be found enclosed separately within this Kit), and others who may wish to begin their consideration of library management games with a more general introduction to the technique will also find a list of suitable references enclosed.

The Loan and Duplication Policies Game has been designed to provide the student with an overall feel for the interactions which occur within a limited part of the library's operations. The experience gained from actually managing the library under gaming conditions gives the student the opportunity to learn about the decision-making process within the library by the use of simulation, and the opportunity to learn from mistakes made in this situation. In summary, the benefits which can be expected from the use of the gaming method are set out below:

- (i) The student learns by finding out from his own mistakes - mistakes which would jeopardise the performance of the library in the real situation.
- (ii) Simulation-games almost always generate far more interest than conventional lectures or seminars, and the student is better motivated to learn.
- (iii) The student has an opportunity to try out his knowledge of analytical techniques. (Graph plotting, statistics etc.)
- (iv) An overall, integrated picture of the various aspects of policy is presented. It is often impossible to present the true interrelationships between different policies and measures of performance in any other way.

These are benefits which accrue from the use of any educational simulation game. A short description of the way in which the Loan and Duplication Policy Game developed will show how it fits into this general setting.

In 1970 the University of Lancaster Library Research Unit published a report on a research project which had investigated some aspects of the library's operations by the techniques of Operational Research (1).^{*} A model which simulated the

^{*} References will be found in the bibliography which is enclosed separately.

interactions between loan policies, duplication policies and availability had been produced, and had been used operationally by the librarian to prepare guide-lines for new policies.

During 1971 and 1972 the model was further developed, not as an aid to decision-making, but as an educational device, designed to teach students of librarianship about the interactions of this aspect of library stock control. The initial project was a feasibility study, and was designed to discover whether or not the use of management games in librarianship was feasible. The game which was produced during this project was a prototype, designed for use as a demonstration game only, and has since undergone further development. Users of the Game should bear in mind that the present simulation kit supersedes the information contained in the Final Report on the Feasibility Study (3).

- 4 -

UNIVERSITY OF LANCASTER
LIBRARY RESEARCH UNIT

Agreement for non-commercial use of results, including computer programs and full documentation, developed under support from the Office for Scientific and Technical Information.

1. The University of Lancaster will supply (on a non-exclusive basis) one copy of the program for the Library Management Game (Loan and Duplication policies) together with all relevant documentation. No charges will be made, except those actually incurred in providing copies.
2. The program will be used for the purposes of teaching and/or research, and will not be used for revenue-producing activities.
3. The University of Lancaster will not accept any liability for faults in the program supplied and any consequences arising from its use.
4. Neither the program, nor any copy of it (or part of it) shall be released to a third party without the prior approval of the University of Lancaster.
5. The University of Lancaster shall be notified of any modifications made to the program, and these modifications shall be documented adequately. Notification shall be made as soon as possible after any modification has been made.
6. Failure to comply with any of the above conditions shall result in this agreement becoming void. In any such case, all copies of the program and its documentation shall be returned to the University of Lancaster.

We, _____*, hereby agree to the above conditions for the supply of computer programs and documentation, and request that the University of Lancaster Library Research Unit should supply ONE copy of the program for the Library Management Game (Loan and Duplication Policies) together with all relevant documentation.

(signed) _____

(position) _____

(date) _____

(address) _____

* please enter name of organisation in this space.

UNIVERSITY OF LANCASTER LIBRARY RESEARCH UNIT

SIMULATION KIT NO.1

MARKET RESEARCH LTD.

REPORTS MR1 to MR7

LIBRARY NUMBER 5

MARKET RESEARCH LTD.

Report MR1

LIBRARY No. 5

Subject

We were commissioned to report on the use of books in the library.

Methodology

It has been determined that the library holds 10,000 monographs and that there is no duplication. We therefore decided to take a 1 in 10 random sample of all the books in the library and to check each date-label to determine the number of times that the book had been issued during the previous year. Books which were on loan and in the sample were checked on their return to the library. All the items in the sample were traced.

Results

The table below shows the number of times that the books had been issued during the year.

Number of issues during the year	0	1	2	3	4	5	6	7	8	9	10
Number of books	400	240	170	100	60	15	8	3	2	1	1

TABLE MR1

Accuracy

The results are believed to be accurate to within $\pm 5\%$ of the true values.

MARKET RESEARCH LTD.

Report MR3

LIBRARY No. 5

Subject

A report on the amount of time which users, on average, spend in actually using the books which they borrow.

Methodology

A diary form was inserted in every book, when it was issued, and retrieved on the book's return. The length of time for which the book had been borrowed was recorded. Users were asked to mark on the diary the amount of time for which they used the book at the time of use.

Results

The table below reproduces a typical set of results.

Length of time during which book was on loan (Hours)	1	5	20	50	100	500	1000	2000
Amount of use (Hours)	0.192	0.819	1.764	1.896	2.109	3.457	4.456	5.062

TABLE MR III

Accuracy

Although the accuracy of the results relating to longer periods of loan may not be as good as that of the other results, we would expect the overall distribution to give an error of not more than $\pm 5\%$.

MARKET RESEARCH LTD

Report MR4

LIBRARY No. 5

Subject

A report on the unit costs of various activities

(1) Issues

We have found that the cost of issuing books can be broken down into two parts:

- (a) Cost of stationery, etc. i.e. a cost per issue.
- (b) Cost of staff, who are each capable of undertaking a certain work-load.

We have estimated that the cost of (a) is 1p per issue and that one member of staff is required for every 10,000 issues. It is necessary to ensure that one senior member of staff is working on the issue desk at all times (cost £2000 per annum). Junior staff cost £1000 per annum each. Both senior and junior staff have the same work-rate with respect to the number of books issued.

We have taken into account the costs of discharging and reshelving in estimating the issue costs.

(2) Purchase of duplicates

The average price of duplicates during the coming year is estimated at £4 each, and we also estimate that the cost of processing a duplicate will be about £2, (this figure includes all processing costs including new catalogue cards, labelling and binding where necessary).

(3) Purchase of new titles

The costs associated with the purchase of new titles do not appear to be significantly different from those associated with duplicate purchase.

(4) Staff training costs

It has been found that, when a new loan period is introduced, a cost of about £200 per member of staff is incurred for re-training etc. We have been unable to identify any costs associated with training new staff in any other circumstances.

(5) Inflation

Although one of our objectives when we began this survey was to investigate the effects of inflation on costs, we have since been assured that the library committee make periodical grants to offset these effects, and we therefore discontinued our work. Although the librarian does not need to allow for inflation in his estimates, it may be of interest to know that we estimate that there will be an increase of about 8% per annum in book prices and about 5% per annum in salary costs, if present trends continue.

MARKET RESEARCH LTD.

Report MR5

LIBRARY No. 5

Subject

An analysis of the length of time for which books are retained when borrowed, and its relationship to the official loan period.

Methodology

A random sample of books were collected on the day that they returned from loan and the length of time since they had been borrowed was recorded.

NOTE This survey was carried out by kind permission of the librarians of libraries A, B, and C and therefore does not necessarily apply to this library. The results should be of general interest.

Results

The attached table reproduces the results obtained in the three libraries. Note that three different loan policies were in force.

Accuracy

We estimate that these results contain errors not exceeding $\pm 3\%$.

Days since issue	LIBRARY A (7-DAY LOAN)	LIBRARY B (14-DAY LOAN)	LIBRARY C (28 DAY LOAN)	Days since issue
0	110	-	3	0
1	147	306	12	1
2	139	274	7	2
3	152	306	10	3
4	155	366	12	4
5	206	227	17	5
6	474	246	15	6
7	2236	410	20	7
8	534	270	12	8
9	173	176	7	9
10	105	219	8	10
11	91	305	11	11
12	85	236	9	12
13	84	458	18	13
14	88	1343	19	14
15	22	558	15	15
16	17	210	10	16
17	19	169	18	17
18	9	137	17	18
19	8	100	13	19
20	8	62	16	20
21	7	120	19	21
22	0	63	12	22
23	-	25	20	23
24	-	44	28	24
25	-	30	24	25
26	-	30	33	26
27	-	21	52	27
28	-	26	133	28
29	-	-	32	29
30	-	-	16	30
31	-	-	20	31
32	-	-	14	32
33	-	-	14	33
34	-	-	17	34
35	-	-	13	35
36	-	-	4	36
37	-	-	1	37
38	-	-	6	38
39	-	-	2	39
40	-	-	0	40
41	-	-	1	41
42	-	-	0	42

TABLE MR IV

MARKET RESEARCH LTD.

Report MR7

LIBRARY No. 5

Subject

A report on the decline in usage of books with respect to time.

Methodology

A sample of books acquired 10, 9, 8, etc. years ago was examined to determine the number of issues in each year since they were acquired. (year 0 in the table of results).

Results

The results are shown in the table below:

Year	0	1	2	3	4	5	6	7	8	9
No. of books in sample	190	180	170	160	150	140	130	120	110	100
Total No. of issues	285	246	211	181	155	131	111	93	78	64

TABLE MR VI

Accuracy

To within $\pm 5\%$ of the true value.

- 14 -

UNIVERSITY OF LANCASTER LIBRARY RESEARCH UNIT

LIBRARY MANAGEMENT GAME

(Loan and Duplication Policies)

COMPUTER PROGRAM AND DOCUMENTATION

IMPORTANT NOTE

Under the terms of agreement of the project within which this Library Management Game has been developed, the University of Lancaster is unable to release computer programs and/or documentation to any outside body unless that body has previously agreed in writing to certain conditions for the supply and use of such programs and documentation. Purchasers of the University of Lancaster Library Research Unit Simulation Kit No. 1. can, therefore, be supplied with the game program and its documentation only on returning the attached form, duly completed, to the Research Unit at the address below. One copy of the program will be supplied free to purchasers of the Simulation Kit.

It is very much regretted that this lengthy procedure has to be followed, but users are assured that every effort will be made to ensure that the program is despatched to them with the minimum of delay.

Library Research Unit,
University of Lancaster,
Baillet-Latour,
LANCASTER LA1 4YH
England

UNIVERSITY OF LANCASTER LIBRARY RESEARCH UNIT
LIBRARY MANAGEMENT GAME

Describe your policies in detail on this form and hand it to the Game Editor. He will translate it into machine readable form and will return your results to you.

LIBRARY NUMBER:

LOAN PERIODS

DUPLICATION

PURCHASE OF NEW TITLES

LIBRARY NUMBER _____

ENCLOSURE B

LOAN PERIODS _____

DUPLICATES _____

TITLES _____

This form is not to be used by participants

DAYS	HOURS
1	24
2	48
3	72
4	96
5	120
6	144
7	168

WEEKS	HOURS
1	168
2	336
3	504
4	672
5	840
6	1008
7	1176
8	1344
9	1512
10	1680

UNIVERSITY OF LANCASTER LIBRARY RESEARCH UNITSIMULATION KIT NO.1LOAN PERIOD CONVERSION TABLE

DAYS	HOURS
1	24
2	48
3	72
4	96
5	120
6	144
7	168

WEEKS	HOURS
1	168
2	336
3	504
4	672
5	840
6	1008
7	1176
8	1344
9	1512
10	1680

ENCLOSURE D

UNIVERSITY OF LANCASTER LIBRARY RESEARCH UNIT
SIMULATION KIT NO. 1

Sample Print-out of Results

UNIVERSITY OF LANCASTER, LIBRARY RESEARCH UNIT
LIBRARY MANAGEMENT GAME

RESULTS FOR LIBRARY 1 IN YEAR 0

SAT. LEV.	COL. BIAS	DOCUMENT EXPOSURE	NO. OF ISSUES	AV.DOC EXP PER ISSUE	DUPS. BOUGHT	TITLES BOUGHT
52.67	59.78	69389.8	13164	5.008	0	0
BOOKS HELD	TITLES HELD	YEAR'S COSTS	COSTS SO FAR	INC. IN S.L./£	INC. IN DEXP/£	
10000	10000	3065.8	3065.8	.0000	.0000	

Note: These results represent approximately the starting-point of each library before the policies for year 1 are input.

KEY TO COMPUTER OUTPUT

SAT. ----- LEV. PERCENT	the satisfaction level during the year, expressed as a percentage.
COL. ----- BIAS. PERCENT	the collection bias during the year, expressed as a percentage.
DOCUMENT ----- EXPOSURE HRS.	the total document exposure during the year, obtained by summing the individual document exposure due to each issue, expressed in hours.
NO. OF ----- ISSUES	the number of issues during the year.
AV. DOCEXP ----- PER ISSUE HRS.	the average document exposure per issue during the year, expressed in hours.
DUPS. ----- BOUGHT	the number of duplicates bought at the beginning of the year.
TITLES ----- BOUGHT	the number of titles bought at the beginning of the year.
TOTAL ----- BOOKS NOW	the total number of books held by the library at the end of the year.
TOTAL ----- TITLES NOW	the total number of titles held by the library at the end of the year.
COSTS ----- THIS YEAR (£)	the total cost of running the library this year.
TOTAL ----- COSTS SO FAR (£)	the total cost of running the library during this year and all previous years in the quinquennium.
INC. IN ----- SAT. LEV. PER £	the increase in satisfaction level per pound expenditure over last year.
INC. IN ----- DOCEXP PER £	the increase in document exposure per pound expenditure over last year.

-20-

BIBLIOGRAPHY

I. WORK REFERRED TO IN THE TEXT

1. BUCKLAND, M.K., A.HINDLE, A.G.MACKENZIE and I.WOODBURN Systems Analysis of a University Library: Final Report on a Research Project. University of Lancaster Library Occasional Papers No.4. Lancaster. University of Lancaster, 1970.
2. BUCKLAND, M.K. "An Operations Research Study of a Variable Loan and Duplication Policy at the University of Lancaster" Library Quarterly, 42(1) January 1972, pp 97-106.
3. BROPHY, P., M.K.BUCKLAND, G.FORD, A.HINDLE and A.G.MACKENZIE, A Library Management Game: A Report on a Research Project. University of Lancaster Library Occasional Paper No.7. Lancaster. University of Lancaster, 1972.

II. BACKGROUND READING

(a) Games in Education

1. LONGLEY, C. (Ed.) Games and Simulations, London, British Broadcasting Corporation, 1972.
2. TAYLOR, J.L. and WALFORD, R. Simulation in the Classroom, Penguin, 1972

(b) Research in Library Management at the University of Lancaster. (See also references 1 and 2 of Section I above).

1. MACKENZIE, A.G. "Library Research at the University of Lancaster" Library Association Record, 73(v) 1971, pp 90-92.

(c) The Library Management Game (see also reference 3 of Section I above).

1. BROPHY, P. and M.K.BUCKLAND "Simulation in Education for Library and Information Service Administration". The Information Scientist Vol.6 (3) September 1972, pp 93-100
2. BUCKLAND, M.K. and A.HINDLE "The Case for Library Management Games" Journal of Education for Librarianship. Vol.12(2) Fall 1971 pp 92-103.



