THE UNIVERSITY OF KANSAS
Lawrence

February 20, 1940

Dear Coach:

I am enclosing herewith the annual questionnaire of the
National Basketball Committee of the United States and Canada. If
properly used these questionnaires can be an educative medium of some
value. We should regard them as more than a means of securing senti-
ment on various phases of the rules. They should serve as a means of
checking up on experimental work which has been promoted through the
season, a means of enabling basketball leaders of the country to ex-
press opinions and thus have a voice in final legislation, and as an
incentive for the holding of discussion groups in connection with the
final tournaments or similar events in the colleges.

Will you kindly give these questions your very careful
thought and consideration? Only signed questionnaires will be included
in the report sent to the secretary of the Committee. I would apprec-
iate it if you will return your questionnaire to me not later than
March 1st, so that I may have opportunity to prepare my summary and
report for Mr. H. V. Porter, secretary of the Committee.

Thanking you for your cooperation, I am

Sincerely yours,

Forrest C Allen

Chairman, Fifth District,
National Basketball Committee.

NATIONAL BASKETBALL COMMITTEE
of the UNITED STATES AND CANADA

1940 ANNUAL QUESTIONNAIRE

This questionnaire is sent annually to representative basketball men in order that their views may be presented at the annual meeting of the National Committee. The Committee will be grateful if you will check these answers and

RETURN THE QUESTIONNAIRE PROMPTLY to Dr. Forrest C. Allen
University of Kansas, Lawrence, Kansas.

The Committee Member or State Athletic Officer whose name appears above will send all replies received up to March 16th to the Secretary of the Committee, 11 South LaSalle Street, Chicago, Illinois.

PART I. Concerning rule changes made last spring:

1. Any player may request a time-out. Is present rule satisfactory? Yes............ No............

2. After a technical foul, the throwing team keeps possession at mid-court. Is present rule satisfactory? Yes............ No............

3. A captain may waive the free throw and take the ball at mid-court after a personal foul. Is present rule satisfactory? Yes............ No............

4. When a player in the act of throwing is fouled from behind, two free throws are always awarded.
   (a) Has this rule been properly enforced?
   Yes............ No............
   (b) Has it tended to eliminate the deliberate push in the back? Yes............ No............
   (c) Is present rule satisfactory?
   Yes............ No............

5. On a free throw for personal foul, it is a violation when the ball does not go through or touch the ring before touching a player. Is present rule satisfactory? Yes............ No............

6. Is the present rule on the four-foot end space satisfactory? Yes............ No............

PART II. Concerning general trend of game:

7. Molded Type Ball:
   (a) As compared with the ball with sewed seams, the molded type ball is (1) More satisfactory............ (2) Equally as satisfactory............ (3) Less satisfactory............
   (b) The best bouncing reaction of a ball is:
   (1) Minimum 49".......... Maximum 54"..........
   Median 51" to 52"............

8. What percentage of the courts on which you play have: (1) Poor lighting............% (2) Less than four-foot space behind backboard............%.

9. (a) Is the present game as interesting and scientific as it was with the center jump? Yes............ No............
   (b) Are criticisms valid enough to warrant consideration of reinstatement of the center jump with restrictions such as having players rotate for the jump? Yes.......... No............

10. Do you favor encouragement of experimentation with:
    (a) Baskets without a backboard?
    Yes............ No............
    (b) Baskets 11 or 12 feet high?
    Yes............ No............

(c) Free throw lanes 8 feet wide?
Yes............ No............

PART III: Concerning rules for 1940-1:

11. Assuming that proper safeguards would be made against any sudden compulsory use of equipment whose use would involve considerable expense, do you favor permitting the optional use of:
    (a) A flat surfaced backboard with several inches removed from the borders and with upper edge circular? Yes............ No............
    (b) A convex surfaced board with shape as in
    (a). Yes............ No............

12. (Check this only if you are connected with College or Independent games).
    College and Independent games should be played in 10-minute quarters. Yes............ No............

13. Should the number of jump balls be reduced by:
    (a) Awarding ball to the offensive team, if it is in the air on a try at the end of a quarter and is not successful. Yes............ No............
    (b) By awarding ball to the team on defense, if they cause a held ball outside the lane or center restraining circle? Yes........ No........

14. (Check only one)
    (a) For games played in quarters, remove restriction on number of times a player may enter during first three quarters and permit only one re-entry during the fourth quarter and during each overtime period. Yes...........
    (b) In any game permit a player to re-enter three times. Yes............
    (c) Retain present rule on re-entering.
    Yes............

15. Following a successful field goal or successful last free throw for personal foul:
    (a) Start watch as soon as goal is made.
    Yes............ No............
    (b) Remove right of either team to take charged time-out. Yes............ No............
    (c) Permit substitution after any goal.
    Yes............ No............

16. Consider any foul (not flagrant) against a player who is in his back court as a technical foul. (Note that penalty for technical foul is more severe than formerly). Yes.......... No..........

17. Reduce bouncing tolerance of a ball from the present 5 inches to 3 inches. Yes.......... No..........

18. If any section of the rules needs to be clarified or amplified state which.
    Use reverse side for additional comments.

QUESTIONNAIRE COMMITTEE

F. C. Allen - J. Mark Good - A. F. Jefferess
H. G. Olsen - Oswald Tower - H. V. Porter, Chr.

Signed:.. (Coach............) (Official............) (Administrator............) (Other............)

Institution Represented: College.................... High School.................... Y. M. C. A.................... Other....................

City.. State..

February 14, 1940

To Members,
National Basketball Committee:

The basketball questionnaires are now being printed and a supply will be sent to each committee member in the next couple of days.

If properly used, these questionnaires can be an educative medium of some value. We should regard them as more than a means of securing sentiment on various phases of the rules. They should serve as a means of checking up on experimental work which has been promoted through the season, a means of enabling basketball leaders of the country to express opinions and thus have a voice in final legislation, and as an incentive for the holding of discussion groups in connection with the final tournments or similar events in the colleges, Y.M.C.A.'s and other organizations.

The distribution and actual use to which they will be put depends upon the activity of each member of the committee. They will be distributed only through committee members and through state high school executive officers.

In order that there will not be too much overlapping, I suggest that a plan somewhat similar to that followed last year be in effect. In brief this is:

Each College representative should make an attempt to secure distribution among the colleges in his N.C.A.A. district;
Each Y.M.C.A. representative will take care of the Y.M.C.A. and similar organizations in his section of the country;
The Canadian representatives will secure distribution in their own groups; and
The high school representatives will take care of distribution among the high schools in the group of states outlined in the map which is being supplied those representatives.

If these questionnaires are to be of maximum use, the returns to any given member will be inspected by him to give him an inkling of sentiment in his territory. He should summarize results, including comments, and then send the summary of the filled questionnaires (preferably both) to the Secretary so that a complete recapitulation may be made ready for each member at the annual meeting.

Good organization and haste are essential. Returns must be in the office of the secretary by March 16th. Do not record any vote unless you have a signed questionnaire to back it up.

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Special Note

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If you desire to have any special topic included in the agenda for the Annual Meeting, send it along. There will be provision for general discussion but it is best if most of the topics to be discussed are listed and organized.

Yours truly,

H. V. Porter

Secretary

HVP/j

Lawrence, Kansas
February 17, 1940.

Mr. H. V. Porter,
11 So. LaSalle St.,
Chicago, Illinois.

Dear H. V.:

As soon as the questionnaire arrives we will mail
it out to all of the basketball coaches in this district.
This has been our usual procedure.

I am wondering what distribution is made to the
officials. I think the officials should have one of these
questionnaire so they could offer their suggestions.

I am endeavoring to have the National College Basket-
ball Officials Association meet in Kansas City at the time of
the Rules meeting. Of course, the high school federation is
handled in its own organization by the various state executive
secretaries. In the east they have the Basketball Officials
Association, and we are endeavoring to have them meet in Kansas
City this spring. They have an organization in this district,
but we are trying to have them assemble so their recommendations
could come into the Rules Body the same as it was handled in the
east.

I personally send the questionnaires from this office
to each college and university coach, in our section. As soon
as they arrive this will be taken care of immediately.

Very sincerely yours,

FCA:AH   Chairman, 5th District, N.C.A.A.

THE UNIVERSITY OF KANSAS
Lawrence, Kansas

February 28, 1939

Dear Coach:

I am enclosing herewith the annual questionnaire
of the National Basketball Committee. These questionnaires
are being sent by the Committee to the coaches of colleges
and universities. The high schools and Y.M.C.A. groups are
being taken care of by their various organizations.

Will you kindly give these questions your very care-
ful thought and consideration, and return the questionnaire
to me at your early convenience as I have to make my report
at an early date to Mr. H. V. Porter, secretary of the Com-
mittee.

Your cooperation will be greatly appreciated.

Very sincerely yours,

Forrest C Allen

Chairman, Fifth District,
National Basketball Committee.

RATING BASKETBALL PLAYERS-

THEIR BATTING AND FIELDING

AVERAGES COMPUTED

PLAYING SEASONS OF 1937-38 AND 1938-39

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- - -

- -

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Dr. Forrest C. Allen
Dr. E. R. Elbel
Dr. V. W. Lapp

Department of Physical Education, University of Kansas

March, 1939.

THE KANSAS BASKETBALL OFFENSIVE EVALUATION CHART

This study was undertaken in an attempt to find a means of evaluating offensive basketball. For years the generally accepted method of evaluating a basketball team or an individual has been on the number of scores that were made by the team or by the player. The development of a list of offensive elements was the first step. With that idea in mind a list of offensive elements was made and each activity or play was weighed subjectively. The weight of the item was given due consideration concerning its importance insofar as it contributed to the execution of sound fundamentals and to winning success. Of course, the objective was the successful scoring of field goals or free throws by the player.

The items used in the evaluation chart and their weights are listed below:

A. Positive Items	Weight in Evaluation Points
1. Field goals	10
2. Free throws	5
3. Immediate assists	4
4. Secondary assists	3
5. Recovers ball off opponent's backboard	2
6. Recovers ball off own backboard	2
7. Taps and recovers own jump ball	2
8. Recovers teammate's jump ball	1
9. Makes a good pass to a teammate	1
10. Catches a teammate's pass	1

B. Negative Items	
1. Error of omission	1
2. Held ball obtained by an opponent	1
3. Fumbles ball and it goes out of bounds	2
4. Fumbles ball and it is obtained by opponent	2
5. Taps ball out of bounds	2
6. Wild pass out of bounds	3
7. Wild pass to an opponent	4
8. Violation of rules	5
9. Personal offensive foul	8

In the use of the weighted items the algebraic sum of the positive and negative points is computed. This sum for each game represents the total effectiveness of the team or player.

For the purpose of illustration the Kansas chart of a conference game is shown in "Exhibit A" with team and individual points computed.

The data were collected by student assistants, majors in the Department of Physical Education. Twelve men students were used in the collection of facts, six for each team. The men worked in pairs, one acting as a recorder and the other as an observer. One pair made a record of all the passes and catches, one pair made a spot record of all the shots taken by players' numbers, and the other pair recorded the remaining material.

Definition of Terms

The terms used in the evaluation chart study are, for the most part, in common usage in the game of basketball and need not be defined. However, some of the terms have not usually been connected with basketball and for this reason are defined.

1. Immediate assist, a pass made to a player who scores a field goal.
2. Secondary assist, the pass directly preceding an immediate assist.
3. Error of omission, a mistake in judgment or observation, such as a failure to pass to a teammate who is in a better position for scoring.
4. Held ball obtained by an opponent, a player having complete control of the ball and by poor judgment or poor technique on his part an opponent is able to "tie him up" to such an extent that an official calls a hold ball.
5. Team efficiency, $\dfrac{\text{team positive evaluation points}}{\text{team positive plus negative evaluation points}}$
6. Player efficiency, $\dfrac{\text{player's positive evaluation points}}{\text{player's positive plus negative evaluation points}}$
7. Scoring ability index, number of goals times per cent of goals made plus one-half (free throws times per cent of free throws made)
8. Ball handling error rate, $\dfrac{\text{ball handling errors}}{\text{good catches plus good passes plus ball handling errors}}$

Team Analysis

By using the technique outlined, data were collected on the Kansas team during nine home games and on the opponents during the last three home games. From this material comparisons were made on the Kansas team using the averages for the four non-conference games and for the five conference games. In the last three home games, the Kansas team was compared with its opponents. Different styles of basketball would undoubtedly yield a different average for the number of shots, passes, etc. The frequency of these occurrences are listed as follows:

TABLE 1.

Nine Game Averages
1. Score: 42.7 points
2. Goals: attempted 61.5; made 16.5; %26.9
3. Free throws: attempted 16; made 9.56; %59.7
4. Personal fouls: 10.2
5. Offensive personal fouls: .78
6. Violations: 3.7
7. Rebounds from own backboard: 21.3
8. Rebounds from opponent's backboard: 22.3
9. Passes and good catches: 361.3 passes; 345 catches
10. Wild passes: total 7.57; out of bounds, 2.67; to opponents, 4.9
11. Held balls: obtained by opponents, 3.1
12. Fumbles: total 6.1; out of bounds, 3.1; to opponents, 3
13. Tapped ball: out of bounds, 1.3
14. Jump ball: tapped and recovered own jump ball, .22
15. Jump ball: recovers teammate's jump ball, 10.8
16. Assists: total, 24; immediate, 13; secondary, 11
17. Evaluation points: 1103.0 - 73.2 = 1029.8 points per game
18. Evaluation points per player per minute of play: 5.14 points
19. Evaluation points per score: 24.1 points
20. Team efficiency: 93.8%

It is interesting to note that there are 16.3 more passes than catches. If one adds the fumbles (6.1) and the wild passes (7.57), the difference is almost erased. When one considers the possibilities for offensive mistakes, it would appear that the negative evaluation points (73.2) is relatively low.

In order to compare averages of the four non-conference home games and the five conference home games, the data are presented in outline form.

TABLE II.

Four Non-Conference Games and Five Conference Games:

1. Score: non-conference average, 42 points
            conference average, 43.2 points

2. Goals: non-conference average shots attempted, 68.75; average made, 16.75; %24.4
            conference average shots attempted, 55.8; average made, 16.4; %29.4

3. Free throws: non-conference average shots attempted, 14.0; average made, 8.5; %60.7
               conference average shots attempted, 17.6; average made, 10.4; %59.9

4. Personal fouls: non-conference average, 10.5
                  conference average, 10.0

5. Offensive personal fouls: non-conference average, .25
                            conference average, 1.2

6. Violations: non-conference average, 3
               conference average, 4.2

7. Rebounds from own backboard: non-conference average, 22.0
                               conference average, 20.6

8. Rebounds from opponent's backboard: non-conference average, 19.0
                                      conference average, 25.0

9. Passes and good catches: non-conference passes, 374.75; catches, 362
                           conference passes, 350.6; catches, 331.4

10. Wild passes: non-conference, 8.5; out of bounds, 2.75; to an opponent, 5.75
               conference, 6.8; out of bounds, 2.6; to an opponent, 4.2

11. Held balls obtained by opponents: non-conference, 2
                                     conference, 4

12. Fumbles: non-conference, 6.25; out of bounds, 3.25; obtained by opponent, 3
            conference, 6.0; out of bounds, 3.0; obtained by opponent, 3

13. Tapped ball out of bounds: non-conference, 1.25
                              conference, 1.4

14. Tapped and recovered own jump ball: non-conference, .5 times
                                       conference, no times

15. Recovers teammate's jump ball: non-conference, 13.75
                                  conference, 8.4

16. Assists: non-conference, 25.25; immediate, 13.5; secondary, 11.75
            conference, 23.0; immediate, 12.6; secondary, 10.4

17. Evaluation points: non-conference, 1132.75;- 69 = 1063.75
     conference, 1079.2 - 76.6 = 1002.6

18. Evaluation points per minute of play: non-conference, 26.59
     conference, 25.07

19. Evaluations points per score: non-conference, 25.36
     conference, 23.22

20. Playing efficiency: non-conference, 94.3%
     conference, 93.4%

21. Ball handling error rate: non-conference, 2.2%
     conference, 2.5%

It is interesting to note that the scores are almost identical and that the number of goals are about the same. However, in the conference games, the team took 13 less shots per game. This means that the team's shooting average was considerably better, being 29.4% for the conference games and 24.4% for the non-conference games. From the standpoint of ball handling, there were 24 more passes and 31 more catches per game in the non-conference matches than in the conference games. Both the playing efficiency and ball handling error rate were poorer in the conference games than in the non-conference games.

It should also be noted that for each game point scored in the non-conference games, 20.36 evaluation points (25.36 - 5) were earned by some other method. An analysis of the data shows that scoring a field goal plays a relatively small part in scoring evaluation points, and that ball handling, recovery of rebounds, etc. must be considered to a larger extend.

In the last three games data were obtained on both the Kansas team and its opponents. This material is summarized in the following list.

TABLE III.

Conference Game Records Made by Kansas and Opponents:

1. Scores: Opponents, 102   Kansas, 139
2. Goals: Opponents took 184 shots, made 39 goals; average %21.2
     Kansas took 165 shots, made 56 goals; average %33.9

3. Free throws: Opponents took 44 shots, made 24; average %54.5
     Kansas took 42 shots, made 27, average %64.3

4. Personal fouls: Opponents, 36   Kansas, 27

5. Offensive personal fouls: Both teams made 3 personal fouls while they had the ball and called offensive fouls.

6. Violations: Opponents, 16   Kansas, 15

7. Rebounds off own backboard: Opponents recovered 45;   Kansas recovered 70

8. <u>Rebounds off opponent's backboard</u>: Opponents recovered 40; Kansas recovered 78

9. <u>Good passes and catches</u>: Opponents, 607 good passes; 485 catches
                                  Kansas, 1043 good passes; 998 catches

10. <u>Wild passes</u>: Opponents, 20; 6 out of bounds, 14 to an opponent
                         Kansas, 19; 6 out of bounds, 13 to an opponent

11. <u>Fumbles</u>: Opponents, 20; 9 out of bounds, 11 to an opponent
                     Kansas, 20; 10 out of bounds, 10 to an opponent

12. <u>Tapped ball out of bounds</u>: Opponents, 4 times;   Kansas, 4 times

13. <u>Held balls</u>: Opponents obtained 17;   Kansas obtained 16

14. <u>Jump ball</u>: Opponents tapped and recovered own jump ball 1 time
                       Kansas tapped and recovered own jump ball no times

15. <u>Jump ball</u>: Opponents recovered teammate's jump ball 32 times
                       Kansas recovered teammate's jump ball 23 times

16. <u>Assists</u>: Opponents made 54 assists; 29 immediate, 25 secondary
                     Kansas made 82 assists; 46 immediate, 36 secondary

17. <u>Evaluation points</u>: Opponents, 1997 positive; 244 negative
                              Kansas, 3327 positive; 237 negative

18. <u>Evaluation points per minute</u>: Opponents, 14.6   Kansas, 25.8

19. <u>Evaluation points per score</u>: Opponents, 14.6   Kansas, 22.2

20. <u>Playing efficiency:</u> Opponents, 89.1%   Kansas, 93.4%

21. <u>Ball handling error rate:</u> Opponents, 4.9%   Kansas, 2.6%

(Totals are shown.)

In comparing the totals one can see that the opponents made more attempts at both field goals and free throws than did the Kansas team. However, it should be noted that the home team scored more goals (56 for 33.9%) than the opponents (39 goals for 21.2%). This same thing is true of the free throws with Kansas making 27 free throws for 64.3% and the opponents making 24 free throws for 54.5%.

When one examines the personal fouls Kansas made less (27) than the opposition (36). However, the Kansas fouls yielded the greater number of free throws (44) to the visiting teams (42). It seems that the Kansas personal fouls occurred more often when a man was in the act of shooting than did the fouls of the opponents, by the rate of 8 to 15. In this case the total is somewhat misleading, as the discrepancy occurred almost entirely in one game that Kansas won by 20 points. The most outstanding difference to be pointed out occurred in two places; in the recovery of rebounds and in ball handling.

In the recovery of rebounds, one sees that the Kansas players recovered 70 rebounds off their own backboards, while the opponents recovered 45 off their backboards. The same ratio holds when one notes the rebounds of the opponent's

backboards - Kansas securing 78 while the visitors were collecting 40 rebounds. The recovery of rebounds seems to be the most outstanding difference in the teams.

The ball handling of the teams shows that Kansas caught and passed 2041 times and the opponents 1092 times. This difference could be entirely due to various styles of play. However, when one considers the errors in ball handling, such as wild passes, fumbles and held balls obtained by opponents, we see that Kansas made 55 errors and the opponents made 57 errors in ball handling. While the number of errors remained about the same, it should be pointed out that the opponent's ball handling error rate (4.9%) was almost twice that of the home team (2.6%).

In considering the total negative evaluation points, both Kansas and the opposition made about the same number of mistakes (237 for Kansas and 244 for the visitors). However, Kansas earned 3327 positive evaluation points as compared to 1997 positive evaluation points earned by the opponents. When these figures are reduced to playing efficiency, we find that the home team has a playing efficiency of 93.4% as compared with 89.1%.

The data show that for each score point the visitors earned 17.2 evaluation points and Kansas earned 22.2 evaluation points. By deducting the 5 evaluation points for each score point one sees that 12.2 evaluation points were earned as compared with 17.2 for Kansas. While Kansas had the ball earning the extra evaluation points it is certain that the opposition was not scoring. However, as pointed out previously, the various styles of play may effect the total number of evaluation points, but the style should not have a great deal of effect on errors in ball handling.

In making direct comparisons between specific teams, a summary table made up from the evaluation summaries shows much the same facts as the totals between Kansas and the opposition.

TABLE IV.

Summary from Evaluation Chart:

Team	Score	Goals	% of goals	Free throws	% of free throws	Personal fouls	Errors in ball handling	Total passes and catches	% of errors in ball handling	Recovery of rebounds	Players efficiency
Kansas	48	17	33	14	77	13	18	623	2.8	39	91.3
School A	33	12	16	9	56	15	18	441	3.9	41	91.4
Kansas	35	16	35	3	37	5	27	738	3.5	43	91.9
School B	33	15	29	3	60	8	26	326	7.4	24	86.6
Kansas	56	23	31	10	63	9	10	680	1.4	66	96.6
School C	36	12	20	12	51	13	13	325	3.8	20	89.1

School A played the home team fairly even on most of the comparisons except that they could not hit the goal, making only 16% of their field goals, while Kansas was making 33% of their attempts.

School B played the closest game from the score standpoint. Their loss can be credited to a poorer shooting percentage than Kansas and possibly the direct cause of the loss was Kansas' ability to recover the rebounds, the control of which gave them additional chances to score and prevented Team B from scoring during the added time that the home team controlled the ball.

School C excelled only in the number of free throws while Kansas had a 63% average in free throwing as compared to a 51% average.

Like the total table, this summary table shows that the fundamentals of the game - shooting, ball handling and rebound recovery - are necessary to offensive power and for winning games.

Individual Player Rating

During the season a running tabulation was kept on each player who played in the home contests, showing the individual's performance in each game and his total endeavors for the season. (Sample record, Exhibit B.)

Since the close of the season other items have been devised, such as ball handling error, playing efficiency, and scoring ability. These points do not appear on the original tabulation sheets.

In rating an individual basketball player's offensive ability, many points should be taken into consideration, and the method as a whole needs some modification, depending upon the position played and the style of basketball used. Naturally, the guards will recover more rebounds from the opponents' backboard than the forwards. It also follows that the forwards should recover more rebounds off their own backboard, and certainly the center or "quarterback" man will handle the ball more often than other offensive players. These general trends are apparent as soon as one begins a n intensive study of the data gathered.

The players have been listed (see Table V, Evaluation Point Totals) by the number of minutes played during the home games. By a brief study of this table one can see that there is a high relationship between minutes played and the total number of evaluation points. The next column should have more meaning in that points are considered in relationship to the total number of minutes played. The column on playing efficiency was arrived at by the formula given in the definition of terms (no. 6). This rating is probably the most meaningful in the table, but it does not tell the complete story.

Ball handling is the basis for offensive ability, and for this reason a ball handling table has been tabulated (see Table VI).

TABLE V.

Ratings Based on Evaluation Point Totals

Player	Minutes*	Eval. Points Earned	Points per Minute	Player efficiency Percentage
A	328.5	2098	6.38	97.3
B	266	1307	4.91	92.2
C	263.5	1300	4.93	96.4
D	221.5	1256	5.67	94.9
E	141.5	560	3.96	90.5
F	117	628	5.37	94.1
G	100	460	4.60	94.2
H	74.5	344	4.62	93.0
I	70.5	310	4.39	91.7
J	70.0	395	5.64	91.6
K	59.5	297	4.99	94.3
L	34.5	120	3.48	84.5
M	22.5	117	5.22	91.5

*Time as recorded by W. A. Dill, compiled by the Dill method of playing time recording.

TABLE VI.

			Ball Handling			Goal Shooting			Passing and Catching		
Player	Position *	Scoring ability	Goals made	% of goals made	Free throws made	% of free throws made	Total passes and catches	Errors in ball handling	% of errors in ball handling	Ball handling rank
A	g	1	47	32.6	28	59.6	1273	15	1.17	2
B	f,c	2	23	27.1	20	66.7	845	26	2.9	7
C	g	3	13	33.3	5	71.4	1004	17	1.7	3
D	c	4	14	28.0	5	62.5	961	18	1.8	4
E	f	6	10	30.3	5	71.4	372	18	4.6	12
F	f	7	12	17.9	8	57.1	341	7	2.0	5
G	f,g	9	4	20.0	2	50.0	348	4	1.13	1
H	f	5	13	30.2	4	66.7	166	11	6.2	13
I	f	8	7	21.2	2	33.3	192	8	4.0	11
J	f	10	3	16.7	2	40.0	346	11	3.1	8
K	g,c	11	2	25.0	1	50.0	244	6	2.4	6
L	g	13	0	0	0	0	116	4	3.3	9
M	f	12	1	33.3	2	66.7	85	3	3.4	10

*guard, forward, center

In this tabulation of the percentage of goals made (see Table VI), one can see that player C and player M have both the same score, 33.3%. However, player C was the most valuable on the basis of other items. Player A with 32.6% is undoubtedly more valuable than either. This method must be tempered with judgment. In order to arrive at an index number for rating scoring ability an arbitrary formula was used (see definition of terms, No. 7). This gives a rather high index number which when reduced to a one-two-three basis rating gives a logical order.

Errors in ball handling include the total number of wild passes, fumbles, and held balls obtained by an opponent. In order to arrive at a ball handling error rate, the total number of passes and catches was assumed to be an accurate index as to the relative number of times chances for errors were present. By using the formula given in definition of terms, No. 8, an index was established. The guards handled the ball more often than did the forwards, and the two players with the lowest ball handling error rate (players A and G) are guards. However, player G also played as a forward. The lowest error rate for a forward was 2.0 for player F.

In order to find further ratings for the purpose of analysis, the scores from the evaluation chart were computed on a point per minute basis and a rating from 1 to 13 given the various players. The material in this chart (Table VII) is of value until one reaches the players with only a few minutes of playing time. Here the chart breaks down because these players did not perform all of the items mentioned, and are rated too highly. This material is discussed somewhat in the summaries dealing with the individual players.

TABLE VII.

Rating on Activities per Minute*

Player	Position	Time played	Eval. points per min.	Goals per min.	Free throws per min.	Personal fouls per min.	Immediate assists per min.	Ball off opp. backboard per min.	Ball off own backboard per min.	Recovers tm.jump ball per min.	Good passes per min.	Good catches per min.	Fumbles per min.	Wild passes per min.	Negative points
A	g	1	1	2	2	6	8	4	11	11	5	3	1	4	1
B	f	2	8	5	3	5	2	8	7	10	9	9	6	9.5	9
C	g	3	7	8	11	9	10	1	13	2	4	7	4	6	5
D	c	4	2	7	9	10	3	10	9	9	3	2	9	3	3
E	f	5	12	6	6	8	5	9	4	8	11	12	7.	9.5	10
F	f	6	4	3	4	11	6	7	1	1	10	10	5	5	6
G	f,g	7	10	11	10	12	7	2	12	3	7	8	2	1	2
H	f	8	9	1	5	8	4	12	10	4	13	13	12	8	7
I	f	9	11	4	8	1	9	3	2	7	12	11	3	7	8
J	f	10	3	10	7	3.5	12.5	6	3	12	1	1	13	12	12
K	g,c	11	6	12	12	7	11	11	8	6	2	4.5	10	2	4
L	g	12	13	13	13	3.5	5	5	6	5	8	6	11	11	13
M	f	13	5	9	1	13	1	12	5	13	6	4.5	8	13	11

*A ranking of 1 is the best performance.

TABLE VIII.

Offensive Ability Rankings

Player	Position	Varsity Ranking	Freshmen's Ranking	Coach's Ranking	Scoring Ability	Ball Handling Errors	Playing Efficiency
A	g	1	1	1	1	2	1
B	f,c	3	2	2	2	7	8
C	g	2	3	3	3	3	2
D	c	4	4	4	4	4	3
E	f	6	6	7	6	12	12
F	f	5	5	5	7	5	6
G	f,g	9	9	9	9	1	5
H	f	10	12	11	5	13	7
I	f	7	8	8	8	11	9
J	f	8	7	6	10	8	10
K	g,c	12	10	10	11	6	4
L	g	11	11	12	13	9	13
M	f	13	13	13	12	10	11

*Guard, forward, center.

At the close of the season a letter was sent to the 16 letter men of the varsity and the 17 numeral men on the freshman squad. (Sample letter and rating blank, Exhibits C and D.) These 33 boys were asked to rate the 13 varsity players on their offensive playing ability. The 13 players included in the study were ranked by 21 players and the coach. On the basis of offensive playing ability, these rankings plus other significant rankings from the evaluation data are shown in Table VIII.

Of particular interest is the similarity of the rankings that were given by the varsity, the freshmen and the coach. There are only 3 players where the disagreement is more than 2 rankings apart. All are unanimous on 5 players. It should be remembered that in spite of the apparent discrepancies between the judgment ratings and the computed ratings, the latter are built up of isolated abilities. As pointed out earlier, the guards and center have a better chance of making a higher score in ball handling due to their positions and the style of basketball used in this school.

No attempt was made in this study to give any of the players a composite ranking, but it should be noted that player A was a guard known nationally as an All-American player.

On the basis of the individual evaluation tables certain facts are brought out that can best be shown in individual analyses. For that reason, the abilities of the players are discussed as single units.

Summary of Individual Player Analysis

Player A. Guard.

This player was in 9 home games for 328.5 minutes and had a player efficiency rating of 97.3%. He was the number one man in almost any way that he could be rated. He earned 2098 evaluation points and 122 score points. He made 47 goals (32.6%) and 28 free throws (59.6%) and had a ball handling error rate of 1.17%. In earning the high scorer position on the squad he made more passes than catches. This is partly due to his willingness to cooperate and to his position as a guard. There were three men on the squad that took more shots per minute of playing time. Of these three men none had as good an average of made shots. During his long playing time he made only 13 personal fouls; two of his teammates with less playing time exceeded his total number of fouls and five teammates made more fouls per minute of playing time. He was an excellent ball handler, a dandy shot and a team player. The coach, his fellow players, the freshman squad, and the statistics are in complete agreement on his offensive ability and listed him as the number one player on the squad.

Player B. Forward and Center.

From the standpoint of time, this player played more minutes (266) than any other player except Player A. He was also second high scorer, earning 66 points by making 23 goals (27.1%) and 30 free throws (66.7%). From the standpoint of evaluation points, he was also second earning 1307 points, and had a playing efficiency of 92.2%. In ball handling errors he rated 2.9%. Six of his teammates rated poorer in this department. However, in spite of his errors in ball handling he made more passes at the opportunt time to players who scored than any other individual. Even on immediate assists per minute he rated second to only one other player, and this player played only 22.5 minutes during the season. There were four men on the squad that took more shots per minute. He was the only forward on the team to make more passes than catches who played more than 22.5 minutes. He had only 8 personal fouls and was the only player with over 200 playing minutes to have so few fouls. He was rated third by his fellow players, and second by his coach and the freshmen players.

Player C. Guard.

Player C played 263.5 minutes, earning 1300 evaluation points and 31 score points, scoring 13 goals (33.3%) and 5 free throws (71.4%). He handled the ball on passes and catches 1004 times which is the second greatest number on the squad and had a ball handling error rate of 1.7% which is next to that of players A and G. This player took a total of 39 shots and this is the smallest number of shots for any of the players that had over 200 minutes of playing time. As a guard he was in position to recover rebounds from off the opponent's backboard. He recovered 48 times, as compared to Player A's 50 times, and on a basis of recoveries per minute of playing time he is the leader for the team. This player passed the ball 128 times more than he caught it. On the basis of the data gathered this player is a good ball passer and rebound recoverer, which is a great asset to the team. On ball handling he has a very low percentage of errors and has a playing efficiency of 96.4% which makes him the number two man on the squad. His teammates rated him second on offensive ability, and his coach and the freshmen rated him third.

Player D. Center.

Player D was the fourth man on the squad to play over 200 minutes with a total time of 221.5 minutes. He earned 33 score points and 1256 evaluation points, which was fourth high for the squad. While playing he scored 14 goals (28%) and made 5 free throws (62.5%). In ball handling errors he had a low score of 1.9% and was one of the four men to score less than 2% errors. His all around playing efficiency was 94.9%, which was also fourth for the squad. As far as ball handling was concerned, he was third in the total number of passes and catches. He made 17 more passes than catches. There were only four men on the squad that took fewer shots per minute. The data show that this player handled the ball many times for a low error rate of 1.870. He was second on the squad in evaluation points per minute and that shows he did not shoot too often. On playing efficiency he was the best center on the squad, and the players, the coach and the freshmen all rated him as the number four man.

Player E. Forward.

This player was a forward and had 141.5 minutes of playing time to his credit. He earned 560 evaluation points and 25 score points. He scored 10 goals (30.3%) and made 5 free throws (71.4%). In ball handling he had an error rate of 4.6 which was second highest on the squad. From the standpoint of player efficiency he was 12th. There was only one other player on the squad that had a lower rate of personal fouls. Player E played 141.5 minutes or over 3½ games of 40 minutes each and made only 3 personal fouls. He is the first player in the list to catch the ball more than he passed it by 4 catches. He also is the first man on the list to be listed as a forward only. Player B played both forward and center during the season. It seems to be a characteristic of the forward position to demand more catching than passing. The data indicate a low personal foul rate, a poor efficiency rating as compared to the players who played 200 minutes and an error rate in ball handling 4 times as high as that of players A and G. He was rated as sixth by his fellow players and the freshmen, and seventh by the coach.

Player F. Forward.

This player was listed as a forward and he played 117 minutes, making 12 goals (17.9%), and 8 free throws (57.1%). He earned 628 evaluation points and 32 score points. On the player efficiency chart he rated 6th with a percentage of 94.1. His rate of error in ball handling was 2.070, which placed him in fifth place. Like the preceding player, he had more catches than passes in ball handling. Only one other player (H) had more attempted shots per minute of play and only two squad members made a smaller percentage of their shots. On balls recovered off his own backboard he rates as the number one man. This is also true for the recovery of his teammate's jump balls. On the basis of personal fouls per minute, this player ranked 11 th for the squad, only two making more than he did. The data indicate that the player was fairly efficient, but that his shooting average was far too low. He makes a first class man on handling rebounds off his own backboard and getting the ball after a teammate's jump, but he committed too many personal fouls. His teammates, freshmen and coach rated him fifth.

Player G. Forward and Guard.

This player was listed as both a forward and a guard. He played 100 minutes, made 460 evaluation points and 10 score points, 4 goals (20.0%), and shot 2 free throws for 50.0%. He earned a rating on player efficiency of 94.2%, which places

him in 5th place for the squad. In errors for ball handling, he rated first with
a rate of 1.13%. As a guard he had an opportunity to recover rebounds off the
opponent's backboard to such an extent that he rated No. 2 for the squad on a basis
of rebounds per minute. He passed the ball more than he caught it, and on the basis
of shots per minute there are only 3 players who took less shots. This player is
12th on the basis of personal fouls committed per minute. The data indicate that
he was an excellent ball handler, and a good rebound recoverer, but he did not
shoot enough. On the basis of efficiency his coach, teammates and freshmen rated
him ninth.

Player H. Forward.

Player H was a forward with 74.5 minutes of playing time to his credit. He
earned 344 evaluation points and 30 score points, made 13 baskets (30.2%) and 4
free throws (66.7%). This player also had the highest number of shots attempted
per minute of play. On the basis of player efficiency he rated 93.0%. But on his
ball handling ability he had an error rating of 6.2%, or 5 times that of players
A and G. He was the 8th player on the basis of time played and he ranked 8th on
the basis of personal fouls. When it came to passing and catching the ball, he made
22 more catches than passes. This player was a good scorer but he shot more than
any other player per minute of play. He made too many errors in ball handling and
in this department he ranked 13th. He ranked 7th on his playing efficiency, and
the players rated him 10th, the coach 11th, and the freshmen 12th.

Player I. Forward.

Player I was in the games for 70.5 minutes as a forward. He earned 395 eval-
uation points and 16 score points, and made 7 goals for 21.2% and threw 2 fouls for
33.3%. On the basis of personal fouls per minute he was number one man with less
than any other member of the squad. He had a ball handling error rating of 4.0%
and a playing efficiency of 91.7%. As a forward he recovered enough balls from the
opponent's backboard per minute to rank as the No. 2 man of the squad. He also was
the No. 3 man in recovering the ball off his own backboard, and he ranked 3rd on
the basis of total recoveries per minute. In the amount of playing time this player
ranked 9th and on the basis of playing efficiency he also ranked 9th. Like the other
forwards, he also caught the ball more than he passed it and ranked 3rd in the
attempted goals per minute of playing time. This player was good at recovering re-
bounds, not too good a shot, and among the 3 players to have an error rating over
4%. He did not commit many personal fouls. He was rated 7th by the players, and
8th by the coach and freshmen.

Player J. Forward.

This man had a playing time of 40 minutes. During this time he made 8 score
points, 3 goals (16.7%), 2 free throws (40%), and earned 395 evaluation points. His
error rating in ball handling was 3.1% and his playing efficiency rated at 91.6%.
He was 10th in the amount of time in home games and ranked 10th in playing efficiency.
As a forward he recovered the ball off his own backboard to rank 3rd on the per min-
ute basis, and caught the ball more than he passed it. As a forward he was not a
good shot as only one boy on the squad had a lower rank and the player who was lower
did not make a basket in his five attempts. He was ranked 8th by his teammates, 6th
by the coach and 7th by the freshmen.

Player K. Guard and Center.

With a playing time of 59.5 minutes this player made 297 evaluation points,
5 score points, 2 goals (25%) and 1 free throw (50.%). His error rate in ball
handling was 2.4% and of the 5 players with a better rating 3 were guards, one was
a forward, and one was a center. His playing efficiency was 74.3, and of the three
players who ranked better than he, two were guards and one was a center. In re-
bounds off the opponent's backboard, he rated 11th and in goals per minute he ranked
12th. This player had some excellent men to compete with and on a team without an
all-American guard he might have had more opportunity to play. Like the other
guards and centers, he passed more than he caught the ball. On rebounds off his
own backboard per minute he ranked 8th and he ranked 6th on the recovery per minute
of a teammate's jump ball. The data indicate that this player was a good ball
handler and an efficient player, but that he did not shoot enough in proportion to
his playing time. He was rated 12th by his teammates, and 10th by the coach and
freshmen.

Player L. Guard.

This boy had a total time of 34.5 minutes, 120 evaluation points, and no score
points. He is the only player of the 13 in the study that did not score during the
home season. He attempted 5 goals and 2 free throws. His error rate in ball handl-
ing was 3.3% and this was better than four of his teammates who played longer. From
the standpoint of playing efficiency he made a score of 84.5%, the lowest on the
squad. The point most in favor of this boy was his rank in free throws attempted
per minute (not making any) in which he was tied with Player J for 3rd place. This
player ranked the lowest of the guards and was the only one to catch the ball more
than he passed it. He was rated 11th by the varsity and freshmen, and 12th by the
coach.

Player M. Forward.

This player ranked 13th in minutes of play (22.5), earned 117 evaluation
points and 4 score points. He made one goal (33.3%) and 2 free throws (66.7%).
He ranked 10th both in player efficiency (91.5%) and in error rate 3.4%. He had
the highest rate of personal fouls per minute of any of the 13 boys. This player
had a very definite height disadvantage as he was by far the shortest man on the
squad and can be considered small in stature even in comparison with boys not play-
ing college basketball. He was ranked 13th by all his fellow players and 13th by
his coach.

The summaries have been presented and discussed in the body of the paper. In
addition, some general conclusions seem to be warranted:

1. The study is of value in that a record was made of the number of times various
activities are performed in college basketball.
2. An accurate record of the offensive abilities of players was made available,
independent of the score book.
3. By examination of the material after a game a coach can see which men were per-
forming their duties and which fundamentals need extra work.
4. The players have a definite interest in the charts and watch their improvement
in deficient abilities.
5. There remains ample room for additional studies.

Exhibit A

	Eval. pts. + wts. -	Corlis	Harp	Pralle	Reid	Florell	Golay	Ebling	Schmidt	Johnson	Durand	Hunt	Kappelmann	Team total
No. of player		3	4	5	6	8	10	12	18	20	7		15	
No. of min. played		23	23.5	40	5	2.5	11.5	5.35	5.35	17.5	3	.5	1	
Total of Eval. Pts.		126	137	239	24	9	32	166	143	30	32	0	3	939
Eval. pts per min.		5.3	6.3	5.9	2.83	3.6	2.8	4.6	4.3	2.4	7.2	0	3	4.68
Goals attempted		6	4	18	1	2	2	8	8	2	0	0	0	51
Goals made		4	2	6	0	0	0	3	2	0	0	0	0	17
% of Goals made		66.7	50	33.3	0	0	0	37.5	25	0	0	0	0	33.3
Free throws att.		1	1	5	1	1	0	8	1	0	0	0	0	18
Free throws made		1	1	3	1	1	0	7	0	0	0	0	0	14
% of Free throws		100	100	60	100	100	0	88	0	0	0	0	0	77
Personal fouls		0	1	1	1	0	2	2	4	2	0	0	0	13
Goal Eval. pts.	10	40	20	60	0	0	0	30	20	0	0	0	0	170
F. T. Eval. pts.	5	5	5	15	5	5	0	35	0	0	0	0	0	70
Immediate assists	4	4	4	4	0	0	0	12	16	12	4	0	0	0	56
Secondary assists	3	0	9	6	0	0	0	3	15	0	0	0	0	33
Ball off backboard of opponent	2	6	8	6	0	4	2	14	0	2	2	0	0	44
Ball off own backboard	2	8	2	2	0	0	4	8	4	0	6	0	0	34
Taps & rec. own ball	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Recovers own teammates jump	1	0	1	0	0	0	1	1	3	1	0	0	1	8
Good passes	1	34	51	72	9	3	18	40	61	16	8	0	1	313
Good catches	1	34	42	76	10	1	15	42	64	15	8	0	1	310
Total No. possible Evaluation points	+1	131	142	243	24	13	52	189	179	38	24	0	3	1036
Error of omission	-1	0	0	0	0	0	0	0	-1	0	0	0	0	-1
Held ball obtained by opponent	-1	0	0	-2	0	0	0	0	0	0	0	0	0	-2
Fumbles and goes out-of-bounds	-2	-2	0	0	0	0	0	-6	0	0	-2	0	0	-10
Fumbles and obtained by opp.	-2	0	0	-2	0	0	0	-2	-4	0	0	0	0	-8
Taps ball out-of-bounds	-2	-2	0	0	0	0	0	-2	-2	0	0	0	0	-6
Wild pass out-of-bounds	-3	0	0	0	0	0	-3	0	-3	0	0	0	0	-6
Wild pass to opp.	-4	0	0	0	0	-4	-4	-8	-4	0	0	0	0	-20
Violation	5	0	5	0	0	0	-5	-5	-15	0	0	0	0	-30
Foul- Offensive Evaluation pts.	-8	0	0	0	0	0	-8	0	0	-8	0	0	0	-16
Total Negative Evaluation pts.		-4	5	-4	0	-4	-20	-28	-28	-8	-2	0	0	-99

	Baker	Washburn	Total	Morningside	Total	Southwestern	Total	Oklahoma	Total	Iowa	Total	Nebraska	Total	Missouri	Total	Kansas State	Season Total
Min. played	7.5	21	28.5	10	38.5	7	45.5	7	52.5	23	75.5	23	98.5	14	112.5	29	141.5
Total Eval. pts.	9	85	94	32	126	22	148	21	169	102	271	127	398	64	462	98	560
Eval. pts. per min.	1.2	3.5	2.7	3.2	2.8	1.6	2.9	3.0	2.9	4.5	3.3	5.3	3.8	4.6	4.1	3.4	3.96
Goals attempted	2	4	6	2	8	3	11	2	13	8	21	6	27	2	29	4	33
Goals made	0	2	2	2	4	0	4	0	4	1	5	4	9	1	10	0	10
% Goals made	0	50	33	100	50	0	36	0	30	17	24	67	33	50	34	0	30.3
Free throws att.	0	4	4	0	4	0	4	0	4	1	5	1	6	0	6	1	7
Free throws made	0	3	3	0	3	0	3	0	3	1	4	1	5	0	5	0	5
% Free throws	0	15	15	0	75	0	75	0	75	100	80	100	83	0	83	0	71.4
Personal fouls	0	2	2	0	2	0	2	0	2	1	3	0	3	0	3	0	3
Goal Eval. Pts.	0	20	20	20	40	0	40	0	40	10	50	40	90	10	100	0	100
F. T. Eval. Pts.	0	15	15	0	15	0	15	0	15	5	20	5	25	0	25	0	25
Immediate Assists	0	16	16	0	16	0	16	0	16	8	28	4	28	4	32	12	44
Secondary Assists	0	0	0	3	3	0	3	3	6	3	9	0	9	3	12	3	15
Ball off Opponents backboard	0	2	2	0	2	0	2	2	4	2	6	6	12	6	18	4	22
Ball off own backboard	0	4	4	2	6	0	6	2	8	8	16	18	24	2	26	14	40
Taps—recovers own ball	0	0	0	0	0	2	2	0	2	0	2	0	2	0	2	0	2
Recovers teammate's jump	0	0	0	0	0	1	1	1	2	1	3	0	3	1	4	2	6
Good passes	4	17	21	9	30	9	39	13	52	35	87	34	121	19	140	44	184
Good catches	8	23	31	8	39	10	49	15	64	33	97	34	131	19	150	38	188
Total No. Positive Eval. Pts.	12	97	109	42	151	22	173	36	209	105	314	131	444	64	509	117	626
Error of omission	0	0	0	0	0	0	0	-1	-1	0	-1	0	-1	0	-1	0	-1
Held ball obtained by opponent	0	-2	-2	0	-2	0	-2	-1	-3	0	-3	0	-3	0	-3	-2	-5
Fumbles and goes out of bounds	0	0	0	0	0	0	0	-2	-2	0	-2	-2	-4	0	-4	0	-4
Fumbles, and obtained by opponent	0	-4	-4	0	-4	0	-4	0	-4	0	-4	0	-4	0	-4	-2	-6
Taps ball out of bounds	0	-2	-2	-2	-4	0	-4	0	-4	0	-4	-2	-6	0	-6	-2	-8
Wild passes out of bounds	-3	0	-3	-3	-6	0	-6	-6	-12	-3	-15	0	-15	0	-15	0	-15
Wild passes to opp.	0	-4	-4	0	-4	0	-4	0	-4	0	-4	0	-4	0	-4	8	
Violations	0	0	0	-5	-5	0	-5	-5	-10	0	-10	0	-10	0	-10	5	
Foul offensive Eval. points	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Negative Eval. points	-3	-12	-15	-10	-25	0	-25	-15	-40	-3	-43	-4	-43	0	-47	-19	-66

Exhibit C

DIRECTIONS

Consider the following items of the player's offensive ability:

1. His scoring ability.
2. His ability to recover rebounds.
3. His ability to pass accurately.
4. His ability to receive the ball on passes.
5. His ability to recover jump balls.
6. His ability to avoid held balls.

After considering the above points, rate the players in the alphabetical
list from 1 to 13. The player you consider best should be rated number 1,
and the poorest should be numbered 13.

Rating of "offensive ability"	Names
————————	Corlis
————————	Durand
————————	Ebling
————————	Florell
————————	Golay
————————	Harp
————————	Hunt
————————	Johnson
————————	Kappelman
————————	Pralle
————————	Reid
————————	Schmidt
————————	Sullivan

Exhibit D

University of Kansas
Lawrence

Department of Physical Education   May 10, 1938.

TO THE BASKETBALL SQUAD:

In connection with the basketball research that we have been doing this winter we need your opinion. You have worked with your group of boys and know them better than an outsider, and hence your opinion is better than mine.

Each member of the Varsity and Freshman squad is being asked to rate a group of this year's varsity players. Will you please read the directions on the enclosed sheet carefully, and in the seclusion of your room give us a careful opinion? If your name is in the list, give yourself an honest rating.

Please note that you are not being asked to sign these sheets and we have no method of identifying them. It is hoped that you will co-operate in this matter.

Very truly yours,

V. W. Lapp.

BASKETBALL EVALUATION STUDY FOR 1938-39 SEASON

Dr. Forrest C. Allen
Dr. E. R. Elbel
Dr. V. W. Lapp

Department of Physical Education, University of Kansas

March, 1939

In the 1938-39 study the evaluation technique has been extended to include a defensive rating system for both the team and the individual player. The items and their evaluation weights, as used in this study, are shown in Table I.

Data were collected during all the home games on both the Kansas team and the visiting teams. The technique used in the collection of these data is the same as described in the first evaluation study.

In the 1937-38 season nine home games were played, and this season eight home games were played, thus making a total of 17 games on which averages of certain activities were available. These averages are shown in Table III. The 17-game averages seem to be reliable as there was no great variation in the figures computed for the two seasons. The team this year took more shots than did last season's team, but averaged one less goal per game. The number of free throws awarded in both seasons was practically identical, but the number made was slightly reduced this season.

This year the total number of positive offensive evaluation points is lower than last year's total. This is due to two reasons. First, there was a change in the technique of tabulating immediate assists. In last year's study credit was given the players for both passes and catches, which gave them double credit in evaluation points. In this year's study a player receives evaluation points only once. The second reason for the lower total is that the recovery of rebounds off the opponent's backboard was computed with the defensive play instead of offensive play, as was the case in last year's study.

The drop in negative offensive evaluation points indicates that the team made fewer mistakes during this season than last season. It is possible that the team summary posted in the team dressing room the day following each game made the individual players more conscious of their mistakes with the end result that fewer were made.

The defensive evaluation points as shown in Table I do not accumulate as rapidly as do the offensive points. However, this is not true of the negative defensive points. During the season the negative defensive points were accumulated almost exactly twice as fast as were the negative offensive points. The penalty for fouling should be high because if a player committed a foul he immediately gave the opponents a chance to make 5 or 10 positive offensive points. In games where a player was forced out by fouls his total negative points exceeded his positive points.

The team summaries (see Table IV) were made from the data gathered during the last home season. Kansas did not lose a home contest this season and lost only one last season. Because no data were available on the opposition at the time of the loss it is not possible to show the effect of losing a game on the statistics gathered. Due to its style of play, Kansas does more passing than most teams. This is well shown under total passes and catches, Table III. Even in a loss it is possible Kansas would show a higher evaluation point total due to the factor just mentioned. It would be interesting to collect data for games played away from home. However, this has been considered impractical to date.

Included in the team summary, Table III, a new term (defensive efficiency) is listed. This term is the result of the formula:

$$\frac{\text{total positive defensive evaluation points}}{\text{sum of positive and negative defensive points}}$$

Due to the ease with which negative defense points can be accumulated the efficiencies for defense are low. The composite efficiency, like last year's efficiency, is based on the net positive points and negative points that are earned during the entire game. The composite efficiency rating seems to parallel the game score more closely than some of the other items.

A close examination of the statistics of the game with Team D will lead one to wonder just how the Kansas team won the game. The story is told in goals made where the home team made two more than the opposition. The remaining statistics are largely in favor of Team D.

In the middle of the season there was some question about the number of violations. It seemed that the number of violations was too low and it was the opinion that our observers were missing a few violations. Without discussing the matter with the observers, a check was made during the game with Team F and both sets of observers had nine violations on the Kansas team charged against the same boys. We realize the data cannot be more accurate than our observers and this check on the violations indicate that our boys were noticing the game rather closely.

Table IV shows the player analysis for twelve players. A few more players were used in the home contests, but all had less than 20 minutes of playing time to their credit and were not included in the present table. The number (see Table IV) preceding the dash in the various columns represents the individual's rank in relation to the other members of the squad.

The scoring ability index as shown in column 2 is based upon goals and free throws made and is computed as shown in the first study under definition of terms. If two boys each made 25 goals, the one with the highest percentage of made shots will have the highest scoring ability index.

By changing the order of some of the data it is possible to make some player comparison between the two seasons' play on the same basis.

Player	1937-38 Season		1938-39 Season	
	Offensive efficiency	Ball handling error	Offensive efficiency	Ball handling error
A	90.5	4.6%	95.7	1.4%
B	96.4	1.7	97.9	.5
F	92.2	2.9	97.2	1.1
I	94.1	2.0	76.4	2.4
L	94.3	2.4	97.6	1.5

This rating shows that all the players, with the exception of Player I who did not finish the season, did make improvement.

The evaluation points per minute (see Table IV) earned during the playing season show how active the individual was, while the composite efficiency shows how well the individual performed his tasks.

The players of visiting teams were rated on the few items which are shown in Table V. The table is limited to players who played at least 15 minutes during the game. The table (V) divides itself naturally into three groups:

    1. Above 90% playing efficiency
    2. Between 80% and 90% playing efficiency
    3. Below 80% playing efficiency.