

ED 021 541

JC 680 281

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NEEDED RESEARCH IN THE JUNIOR COLLEGE.

American Association of Junior Colleges, Washington, D.C.. California Univ., Los Angeles. ERIC Clearinghouse for Junior Coll. Information.

Pub Date Apr 68

Note- 4p.

Journal Cit- Junior College Research Review, v2 n8 April 1968

EDRS Price MF-\$0.25 HC-\$0.24

Descriptors- *EDUCATIONAL RESEARCH, *INSTRUCTIONAL IMPROVEMENT, *JUNIOR COLLEGES, RESEARCH, RESEARCH DESIGN, RESEARCH PROBLEMS, RESEARCH REVIEWS (PUBLICATIONS)

Needed research refers to both the kind of study and the area in which the work is done. Design elements and characteristics for needed research include (1) normative studies, (2) statements of statistical significance, (3) precisely formulated problems, (4) carefully defined hypotheses, (5) well-defined populations and randomly selected samples, (6) integration of data collection and processing, and (7) critical examination of results. Among suggested topics are ones to determine (1) which experiences in vocational/technical courses relate most directly to vocational success, (2) what constitutes vocational success, (3) if the lives of students are made richer by general education, (4) if students enroll in programs compatible with their interests, abilities, and preparation, (5) how much talent is wasted by poor choice of program, (6) how faculty members may be stimulated to greater professional involvement, (7) which factors encourage student motivation toward desired ends, and (8) to what extent the 2-year colleges have achieved their stated objectives. (HH)

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Volume 2, Number 1

UCLA JUNIOR COLLEGE RESEARCH REVIEW

A periodical review of research reports received and processed at the Clearinghouse for Junior College Information

Published by the American Association of Junior Colleges

NEEDED RESEARCH IN THE JUNIOR COLLEGE

"More Research Needed" is the concluding recommendation of many journal articles, research reports, conference proceedings, and books that examine the purposes and programs of the community junior college. Currently, however, there is little research available that relates exclusively to the two-year college and its programs. Indeed, a recent nationwide investigation of institutional research in the community junior college (JC 670-765) found that fewer than 20 percent have formally organized programs of institutional research. This issue of *Junior College Research Review* considers not only some problem areas for

which research is needed, but also the types of research needed.

Review

Each of the previous issues of the *Research Review* has examined documents and institutional research reports on a given topic. These reviews are indicative of some areas for which research is needed. The following table presents the subjects of selected previous issues of the *Junior College Research Review* and the suggestions for needed research on each respective topic. Volume and number for each issue are included.

Title	Vol. : No.	Needed Research
"Follow-ups of the College Transfer Student"	1 : 1	Reasons for success or failure of the transfer student
"The Collection and Utilization of Student Biographical Data"	1 : 2	Determine use of biographical data for instructional planning
"Experimental Programs in the Junior College"	1 : 5	Determine changed student behavior following instruction
"Classroom Testing Practices in the Junior College"	2 : 1	Determine ways to improve classroom testing by instruction
"Research Studies of the Junior College Dropout"	2 : 2	Reasons for dropouts and procedures to reduce attrition rates
"The Junior College Remedial Program"	2 : 3	Placement procedures and instructional methods for remedial education
"Time for Instructional Research"	2 : 4	Compare the effects of various instructional procedures
"Entrance and Placement Testing"	2 : 5	Relationships of tests to curricular objectives and methods for formulating objectives from test results

A recent statewide investigation in California (JC 660-248) invited 77 public colleges to participate in identifying research problems and needs considered critical by the participating institutions. With 65 colleges responding to the questionnaire (85 percent), a composite ranking was compiled. The ten following research needs were placed at the top of a list of 26: (1) Effectiveness and improvement of instruction; (2) Promotion and dissemination of research and development;

(3) Student dropouts; (4) Evaluation of instructional offerings; (5) Financial support; (6) Student characteristics; (7) Preparation of instructors; (8) Realistic student counseling; (9) Faculty loads; and (10) Articulation with four-year colleges. This California study proposed a plan for the California Junior College Association to assist in promoting research and development in California public junior colleges.

A survey-questionnaire study of problems and

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needs of junior colleges in the state of Washington (JC 670-839) identified 38 "important" problem areas. Respondents were categorized into four groups: faculty, administrators, presidents, and total, with a high degree of response uniformity noted among the groups. "Long-range planning needs in the community college" was ranked as the item of highest priority. When the subject headings for related groups of items were compared, vocational-technical education was considered the area of major importance.

Research problems in the area of student personnel programs were considered by the 1964 Research Development Conference on Junior College Student Personnel Programs (JC 670-062). Sixty-eight critical needs were identified in four designated research areas: (1) The nature of the junior college climate as it relates to the achievement of student personnel objectives; (2) The significant characteristics of junior college students; (3) Essential elements of an effective guidance program; and (4) The staffing requirements for an effective student personnel organization. The National Committee for Appraisal and Development of Junior College Student Personnel Programs (JC 670-418) reported similar research needs. However, the Committee posed an additional concern, described as an "omnipresent problem." Specifically, research is needed "to establish a methodology for accurately assessing local labor market conditions and for making dependable projections regarding the employment needs of a limited geographical region."

Since research procedures vary in usefulness and validity, a consideration of needed research also entails suggestions for good research procedures and methodology. For institutional research of junior college students, "normative studies" have been suggested (JC 670-474); by using the same definitional variables for institutional research, "normative" studies permit comparisons between individual institutions. It has been suggested, too, that junior colleges could improve their research endeavors by utilizing the assistance of faculty in mathematics, psychology, statistics, and counseling (JC 680-022). These faculty members may provide helpful suggestions on study design, data collection techniques, data treatment procedures and appropriate interpretations of findings. A survey of the use of standardized tests (JC 680-023) resulted in the suggestion that junior colleges use statistical procedures that allow for tests of significance in order to add meaning to differences reported in test results.

Guidelines for good educational research have been outlined by A. S. Barr in the *Encyclopedia of Educational Research*, third edition, and a few critical points are outlined. The first requisite for good research is a "carefully formulated problem." A topic like "student self-concept" is not a statement

of a problem from which research can emanate; it must be further refined. Even with well-stated problems there is further need for definitions that direct attention to certain observable phenomena. Consider the term "greater verbal response" in the following sentence, "In this course we want to elicit greater verbal response." This term may better be defined as "an increase in the number of questions asked," "fewer one-word or short-phrase answers," or "an increase in the number of students contributing to class discussions." Depending on the problem formulated, further classifications and other definitions are possible.

"Carefully formulated hypotheses" are required for good research. A hypothesis has the value of giving direction for solutions to problems. Its directing function results from the theory and assumptions used for its own formulation. For example, if a researcher were operating on the assumption that learning is facilitated by participation, and if he also believed that physical distance was a factor affecting the frequency and types of verbal communications, he might find direction from the hypothesis that a given classroom arrangement would increase the number of students contributing to discussions.

Careful selection of subjects is a third research need. This includes defining the population to which the research results will pertain and selecting members of that population for data collection. When selecting members, a random sampling technique is one helpful procedure.

Diligent data collection and processing precedes a final need of "carefully formulated inferences." Data collection requires a well-planned procedure and results in something counted, measured, or scaled. It is important that the resultant data be in a form usable for processing. For example, percentage scores are often not appropriate for statistical computations that are designed for statements of significance. They may point general directions or tendencies but must be interpreted with caution.

Carefully formulated inferences point to the stated results of the research. Results must be clearly supported by the procedures and techniques used. When a finding or result is reported, other possible explanations are examined. An inferred result that a given classroom arrangement aided student participation would raise the question "What else can account for the increased participation?" A possible alternative explanation is the duration of time the students and instructor were together. Such alternative explanations can be eliminated when a control group is used in the research design.

Summary

"Needed research" has been used to refer to both problem areas and types of research. As indicated,

stated problem areas are numerous. Specifically formulated problems on which research can be based are rarely found in junior college reports. Some design elements and characteristics for needed research include: (1) normative studies; (2) statements of statistical significance; (3) well-formulated problems; (4) carefully deduced hypotheses; (5) well-defined populations and randomly selected subjects; (6) data collection integrated with processing; and (7) critical examination of results.

More limited and specific problems are worthy of brief comment. Foremost among these might be a critical evaluation of the extent to which two-year colleges achieve their stated functions.

Which experiences in vocational-technical curricula are most directly related to vocational success? What constitutes "vocational success"?

What evidence is available that the lives of students are richer and more productive as a result of general education?

To what extent are students enrolled in programs compatible with their interests, abilities, and preparation? To what extent is talent wasted by poor programming?

By what means may faculty members be stimulated to greater professional involvement? What factors enhance student motivation toward desired ends?

This list of suggested research topics could be extended indefinitely. It does, however, indicate that junior colleges might well engage in the practice.

John E. Roueche
and
John R. Boggs

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