

THE EFFECT OF A DEMOCRACY COURSE  
ON THE INVENTORIED INTERESTS  
OF NINTH GRADE STUDENTS

by *502*

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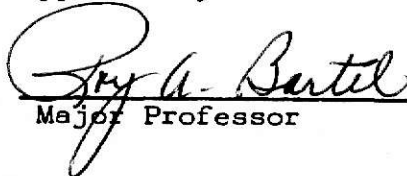
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## Chapter I

### THE PROBLEM AND DEFINITION OF TERMS

One of the challenges of education today is the transfer of formal learning by the recipient to the practical application of that learning in the world. Perhaps an attempt to integrate formal learning and the interests of the learner might facilitate this transfer. Present research of educators such as John Gustad<sup>1</sup> and Leona Tyler<sup>2</sup> tends to indicate that there is no significant relationship between inventoried interests and such factors as social status and specific abilities. It would perhaps be valuable for the educator to know if following a course in democracy designed to inform the student in particular about some of the relevant institutions of his world, factors which help to form interests, and of his own particular aptitudes there would be any significant change in the student's inventoried interests.

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<sup>1</sup>John Gustad, "Vocational Interests and Socioeconomic Status," Journal of Applied Psychology, 38:336-38, 1954.

<sup>2</sup>Leona Tyler, "The Relationship of Interests to Abilities, and Reputation Among First Grade Children," Educational Psychology Measurements, 11:255-64, 1951.

## I. THE PROBLEM

Statement of the Problem. A well-designed democracy course should show some influence on the student's interests.

Hypothesis: There will be a consistent tendency for the coefficient of stability for the scores of a standardized interest inventory given prior to and following a course in democracy of the experimental group of ninth grade students to be lower than that of the control group.

Limitations and Delimitations. The subjects employed in this study were ninth grade students (male and female) ranging from 14 years 1 month to 16 years of age. The subjects were from four heterogeneous classes of one teacher and two heterogeneous classes of a second teacher.

## II. DEFINITIONS OF TERMS USED

Course in Democracy. The course in democracy stressed in particular some of the major institutions of the student's world, insights into vocation selection, and information about his abilities and interests.

Standardized Interest Inventory. The Kuder Preference Record Occupational Form D was the interest survey which was used. Because of the great importance the coefficient of stability held in interpreting the results of the study a thorough investigation of the information available on this aspect of the survey was made. Information resulting from the data of the study was noted and findings reported.

## CHAPTER II

### REVIEW OF THE LITERATURE

During the forty-three years since E. K. Strong first published his Strong Vocational Interest Blank which began the era of research<sup>1</sup> using inventoried interests as an aid, the research has shown that many factors enter the development of an individual's interests.<sup>2</sup> Summaries of studies concerning the relationship between ability and interests presented by Strong<sup>3</sup> showed low or negligible correlations. This study also pointed out the need for more adequate methodological procedures for determining the degree of this relationship. The work of Triggs<sup>4</sup> showed a low correlation and the study by Segel<sup>5</sup> showed no statistically significant results.

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<sup>1</sup>Anne Anastasi, Psychological Testing (second edition; New York; The Macmillan Company, 1961). p. 566.

<sup>2</sup>Douglas H. Fryer, Measurement of Interests, (New York: Holt, 1931), chap. 3.

<sup>3</sup>E. K. Strong, Vocational Interests of Men and Women (Stanford University, California: Stanford University Press, 1934).

<sup>4</sup>Frances O. Triggs, "A Study of the Relation of Kuder Preference Record Scores to Various Other Measures," Educational and Psychological Measurement, 3:341-354, 1943.

<sup>5</sup>David Segel, "Differential Prediction of Scholastic Success," School and Society, 39:91-96; 1934.

The work of Wesley, Corey, and Stewart<sup>6</sup> on intra-individual relationship between interests and ability tended to show "a genuine variation in the degree of relationship between interests and abilities for different activity or vocational areas."<sup>7</sup>

Paternal influence as studied by Werts<sup>8</sup> showed that it reflected in the interests of sons of certain professions, but the study did not consider occupations other than the professions of engineering, medicine and teaching. Occupational level achievement motivation and social mobility are three factors reviewed by Glen H. Elder, Jr.<sup>9</sup> In examining the relationship of occupational level in adolescence to I. Q. and academic preformance to adult achievement among males from middle- and working-class families he found "a significant correlation between interest level and drive for achievement, but this relationship varies markedly by social class."<sup>10</sup> He pointed out the importance of an energetic mother in working-class families, the importance of mental ability in both

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<sup>6</sup>S. M. Wesley, Douglas Q. Corey, and Barbara M. Stewart "The Intra-Individual Relationship Between Interest and Ability," Journal of Applied Psychology, 34:193-97, 1950.

<sup>7</sup>Ibid., p. 195.

<sup>8</sup>Charles E. Werts, "Paternal Influence on Career Choice," Journal of Counseling Psychology, 15:48-52, January, 1968.

<sup>9</sup>Glen H. Elder, Jr., "Occupational Level, Achievement Motivation, and Social Mobility: A Longitudinal Analysis," Journal of Counseling Psychology, 15:1-7, January 1968.

<sup>10</sup>Ibid., p. 3.

classes, and the factor of drive as it applied to each economic level.<sup>11</sup> Relationship of social status to vocational interests in the study by Hyman<sup>12</sup> showed the need to look at the interplay of social status and intelligence.

Gustad also investigated vocational interests and socio-economic status.<sup>13</sup> His findings agreed with those of Darley,<sup>14</sup> Kendall,<sup>15</sup> Ostrom,<sup>16</sup> and Strong<sup>17</sup> that status aspiration which has become known as Occupational Level (OL) plays a significant part in motivation of success or staying power in college.

Kohlan in his study<sup>18</sup> pointed out how one can use knowledge of inventoried needs and inventoried interests to better understand

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<sup>11</sup>Ibid.

<sup>12</sup>Bernard Hyman, "The Relationship of Social Status and Vocational Interests," Journal of Counseling Psychology, 3:12-16, 1956.

<sup>13</sup>John W. Gustad, "Vocational Interests and Socio-Economic Status," The Journal of Applied Psychology, 36:336-38, 1954.

<sup>14</sup>John G. Darley, Clinical Aspects and Interpretation of Strong Vocational Interest Blank (New York: Psychological Corporation, 1941).

<sup>15</sup>William E. Kendall, "The Occupational Level Key of the Strong Vocational Interest Blank for Men," Journal of Applied Psychology, 31:283-287, 1947.

<sup>16</sup>S. R. Ostrom, "The OL Key of the Strong Test and Drive at the Twelfth Grade Level," Journal of Applied Psychology, 33:241-248, 1949.

<sup>17</sup>E. K. Strong, The Vocational Interests of Men and Women (Stanford: Stanford University Press, 1934).

<sup>18</sup>Richard G. Kohlan, "Relationships Between Inventoried Interests and Inventoried Needs," Personnel and Guidance Journal, 46:592-8, February, 1968.

the personality need structures of the various occupations being investigated. An interesting study by Zytowski<sup>19</sup> of the correlation of 49 scores of the Strong Vocational Interest Blank to internal versus external control of reinforcement showed relationships of clusters of occupations to the two variables.

Ewens,<sup>20</sup> Matteson,<sup>21</sup> and Herzber and Russell<sup>22</sup> carried out studies concerning the effect on interest of experience outside the home. Using the Kuder Preference Record as the measuring device, the various studies produced conflicting results. The reason for this might be found in the difficulty of setting up properly controlled investigations of experience and interest.

Bordin and Wilson<sup>23</sup> conducted a study involving the effect of experience on interest using the Kuder in a test-retest pattern. It centered around college freshmen, some of whom changed their curricula

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<sup>19</sup>Donald G. Zytowski, "Internal-External Control of Reinforcement and the Strong Vocational Interest Blank," Journal of Counseling Psychology, 14:177-9, March, 1967.

<sup>20</sup>William P. Ewens, "Experience Patterns as Related to Vocational Preference," Educational and Psychological Measurement, 16:223-31, 1956.

<sup>21</sup>Ross W. Matteson, "Experience-Interest Changes in Students," Journal of Counseling Psychology, 2:113-21, 1955.

<sup>22</sup>Fredrick I. Herzberg and Diana Russell, "The Effects of Experience and Change of Job Interest on the Kuder Preference Record," Journal of Applied Psychology, 37:478-81, 1953.

<sup>23</sup>Edward S. Bordin and Earl H. Wilson, "Change of Interests as a Function of Shift in Curricular Orientation," Educational and Psychological Measurement, 13:297-307. 1953.

between test and retest and some of whom did not. Their conclusion was "the results of this study provide unequivocal support for the assumption that inventoried interests are dynamic phenomena reflecting changes in the individual's perception of himself." However John O. Crites<sup>24</sup> points out that failure to control variables other than the curriculum, such as course grades, might have affected both choice and interests.

Though abundant amounts of research concerning interest has been done in many directions such as trying to determine the dimensions of interest,<sup>25,26,27,28</sup> the development of interests,<sup>29,30,31,32</sup> and the correlates<sup>33,34,35,36,37</sup> of interest no clear-cut evidence to help in the establishment of principals has been developed. In fact, the research findings have often been contradictory or without common agreement as to interpretation. This research has shown the need to further investigate

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<sup>24</sup> John O. Crites, "Interest", Encyclopedia of Educational Research, (4th edition, T. R. McConnell, Chr. of Board of Editors, New York: Macmillan Company, 1961), p. 682.

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L. L. Thurstone, "A Multiple Factor Study of Vocational Interests," Personnel Journal, 10: 198-205; 1931; Edward K. Strong, Vocational Interests of Men and Women (Stanford University Press, 1934), p. 746; William C. Cottle, "A Factor Analysis of the Multiphasic, Strong, Kuder, and Bell Inventories Using a Population of Adult Males," Psychometrika, 15:25-47; 1950; J. P. Guilford and others, "A Factor Analysis Study of Human Interests," Psychology Monograph 68 (No. 4); 1954.

<sup>29,30,31,32</sup> Benjamin S. Bloom, Stability and Change in Human Characteristics (New York: John Wiley & Sons, 1964) p. 237; Leona E. Tyler, "The Development of 'Vocational Interest' I: The Organization of Likes and Dislikes in Ten-year-old Children," Journal of Genetic Psychology, 86:33-44; 1955; Anne Roe, "Early Determinants of Vocational Choice," Journal of Counseling Psychology, 4:212-7; 1957; Richard Brunkan, "Perceived Parental Attitudes and Parental Identification in Relation to Field of Vocational Choice," Journal of Counseling Psychology, 12:39-47; 1965.

total interitem correlation matrix of entire interest inventories to produce pure clusters of interest items. These clusters would facilitate the further study of their relationship to other variables. Another apparent need is to develop studies which employ an experimental control group design which would aid in evaluation of study's results. The lack of information upon which to base the criterion of stability or change of interest is most evident. In this area<sup>38</sup>,<sup>39,40</sup> there is no general agreement.

In considering the interest inventory or inventories which might be used both the Strong Vocational Interest Blank and the Kuder Preference Record Occupational were carefully considered. Both Anastasi<sup>41</sup> and Super<sup>42</sup> reported at length on the validity and reliability of the Strong Vocational Interest Blank. Super pointed

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<sup>33,34,35,36,37</sup> John G. Darley and Theda Hagenah, Vocational Interest Measurements: Theory and Practice. (University Minnesota Press, 1955); Donald E. Super and John O. Crites, Appraising Vocational Fitness (revised edition), (New York; Harper, 1962); Leona E. Tyler, "The Antecedents of Two Varieties of Interest Pattern," Genetic Psychology Monograph 70:177-227; 1946; William E. Kendall, "The Occupational Level Scale of the Strong Vocational Interest Blank," Journal of Applied Psychology, 31:283-8; 1947; Stanley R. Ostrom, "The OL Key of the Strong Test and Drive at the College Freshman Level," Journal of Applied Psychology, 33:51-4; 1949.

<sup>38,39,40</sup> Edward K. Strong, Jr., Vocational Interests 18 Years After College (University of Minnesota Press, 1955) p. 207; Paul L. Dressel, "Interests - Stable or Unstable?" Journal of Educational Research, 48:95-102; 1954; Carl Bereiter, "Some Persisting Dilemmas in the Measurement of Change," In Chester W. Harris (ed) Problems in Measuring Change. (University of Wisconsin Press, 1963) pp. 3-20.

<sup>41</sup> Anne Anastasi, Psychological Testing (second edition; New York: Macmillan Company, 1961), pp. 566-71.

<sup>42</sup> Donald E. Super, Appraising Vocational Fitness by Means of Psychological Tests (New York: Harper & Brothers, 1949), pp. 408-44.



out that the, "Blank was developed for use with and standardized upon college students and adults employed in the professions and in business."<sup>43</sup> The Kuder was designed for use with high school, college and adults and is considered to be somewhat better suited to high school students than the Strong.<sup>44</sup>

The vocabularies of both the Strong and the Kuder were analyzed by Stefflre who reported that the Strong had a tenth grade level,<sup>45</sup> and the Kuder had an 8.4 grade level.<sup>46</sup>

In his study on the possibility of faking on these two tests, Longstaff reported that to some extent it is possible on both, but visibility is somewhat greater on the Kuder, owing to the more obvious nature of its items.<sup>47</sup>

Both the Kuder and the Strong are built on selection of liked and disliked items. The Strong covers such areas as activities, objects, or types of people which one would encounter in daily living. The Kuder offers choices of various activities. The Strong has forty-five occupational keys for men and twenty-five keys for women. The Kuder has developed fifty-two interest scales. Anastasi in summarizing

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<sup>43</sup>Ibid, p. 409.

<sup>44</sup>Anastasi, op. cit., p. 572.

<sup>45</sup>Super, loc. cit.

<sup>46</sup>Ibid., p. 446.

<sup>47</sup>Howard P. Longstaff, "Fakability of the Strong Interest Blank and the Kuder Preference Record," Journal of Applied Psychology, 32:360-9, 1948.

on the two tests stated, "recent developments in connection with both the Kuder and the Strong test have been such as to reduce the initial difference between the approaches of these two instruments to the measurement of interests."<sup>48</sup> The Strong Vocational Interest Blank has developed cluster scales while the Kuder scales are still specific.<sup>49</sup>

In reviewing the Kuder Preference Record - Occupational, Campbell found, "the author had done a careful job of selecting items and developing scales."<sup>50</sup> He also stated, "Considerable thinking about how to assure that the individual's answers are honest and careful" is backed by the development of a scale to identify careless or dishonest answers.<sup>51</sup>

Campbell maintains it is definitely easier to administer and score the Kuder than the Strong, and it has a helpful research handbook and computational sheet. The areas of reliability and validity are still not well established and fall far behind the Strong Vocational Interest Blank.<sup>52</sup>

Research on the stability of 48 of the present 152 scales of the Kuder Preference Record - Occupational, form D (DPR-O FD) is limited to two studies using the Kuder-Richardson formula 20 and two test-retest studies. These four studies were conducted by R. Daniel Malone

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<sup>48</sup> Ann Anastasi, Psychological Testing (second edition; New York: Macmillan Company, 1961), p. 574.

<sup>49</sup> Ibid. pp. 568-71.

<sup>50</sup> David P. Campbell, review of the Kuder Occupational Interest Survey, p. 1284. In the Sixth Mental Measurements Yearbook (ed. Oscar K. Buros, Highland Park, New Jersey: The Gryphon Press, 1965).

<sup>51, 52</sup> Ibid., p. 1285. Ibid.

at Northwestern University. The two studies using the Kuder-Richardson formula 20 were based on a group of 100 cases comparable in composition to the norm group used in constructing the test and a combination of the norm group with the criterion group. The median for the group comparable to the norm group was .64 and the median for the criterion group and group comparable to the norm group was .81.<sup>53</sup>

The test-retest studies reflected the data of 117 students (male and female) at Northwestern University tested with a month interval, and the data of 96 students (male and female) at Evanston (Illinois) High School with a month interval used. The test-retest reliability median for the high school students was .78 and the test-retest reliability for the college students was .85.<sup>54</sup> The makers of Kuder Preference Record feel the importance of reliability within a group is not as important as the reliability of the test to differentiate between groups which is the major accomplishment and objective of this test.<sup>55</sup>

Astin recommended the Strong Vocational Interest Blank as the "best constructed and thoroughly validated instrument of its kind."<sup>56</sup>

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<sup>53</sup>G. Frederic Kuder, Kuder Preference Record Occupational form D Manual (Chicago, Illinois: Science Research Associates, 1965), p. 12.

<sup>54</sup>Ibid.

<sup>55</sup>G. Frederic Kuder, Kuder Preference Record Occupational form D Research Handbook (Chicago Illinois: Science Research Associates, 1956), pp. 6-7.

<sup>56</sup>Alexander W. Astin, review of the Strong Vocational Interest Blank, pp. 1303-4. In the Sixth Mental Measurements Yearbook (ed by Oscar K. Buros, Highland Park, New Jersey: The Gryphon Press, 1965).

Furst in his review felt "the Strong is probably still preferable to its leading rival, the Kuder Vocational, but the latter has its own special advantages and uses."<sup>57</sup> Both Astin and Furst point out that the Strong is more complicated in interpreting than other tests of this type and constructed basically for college and adult usage.<sup>58,59</sup>

It was felt that more insight into change of interest would be gained by the test-retest of one test than that possible in the use of two different but similar tests. The difficulties presented in score comparisons of the two different tests outweighed the dangers brought about by the student's familiarity of the testing vehicle. The factors of vocabulary level, general design to include usage in high schools, the greater visibility of the possibility of faking, the ease of administering and scoring, and the less complicated process of interpreting made the Kuder appear the better choice for this study.

One test review by Rothney questioned the value of the Strong Vocational Interest Blank and interest inventories in general. It

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<sup>57</sup> Edward J. Furst, review of the Strong Vocational Interest Blank, pp. 1304-5. In the Sixth Mental Measurements Yearbook (ed by Oscar K. Buros, Highland Park, New Jersey: The Gryphon Press, 1965.)

<sup>58</sup> Astin, loc. cit.

<sup>59</sup> Furst, loc. cit.

is not so much the author's disbelief in the use of tests as the belief that the inventories are not tests in any common sense of that word which caused him to write so harshly.<sup>60</sup> The chief criticisms were lack of thoroughness in establishing stability, problem of faking, requiring responses to items about which the individual may have little knowledge or concern, and forced-choice among items about which there may be uneven familiarity, lack of opportunity to express genuine enthusiasm or the opposite, difficulties in ipsative score interpretative, and inadequate interpretative data for low scores.<sup>61</sup>

Many of the charges of Rothney were answered by Campbell, but as Campbell himself states, "the testing enterprise needs gadflies like John Rothney and others .... to keep the rest of us more honest and careful in our work."<sup>62</sup> Campbell also admits that sometimes Rothney was right,<sup>63</sup> which keeps the right perspective on the use of any tool in research.

It appeared that the findings of these surveys could be used in a constructive way as noted by Astin in his review of the Strong Vocational Interest Blank.

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<sup>60</sup> John W. M. Rothney, "Test Review," Journal of Counseling Psychology, 14:187-91, 1967.

<sup>61</sup> Ibid, p. 191.

<sup>62</sup> David P. Campbell, "Reaction to Rothney's Review," Journal of Counseling Psychology, 14:192, 1967.

<sup>63</sup> Ibid.

Apparently, it is assumed that knowledge of the information contained in the SVI Blank and knowledge of the vast and impressive body of relevant research will somehow enable the student and his counselor to work out a better vocational plan for the student than would be possible without such knowledge. As far as this reviewer knows however, there is no convincing evidence to support this assumption .... it is hoped that the advocates of the SVIB will continue their tradition of pioneering empirical research by initiating studies to evaluate the usefulness of the SVIB in counseling and guidance.<sup>64</sup>

Anastasi made the point:

.....most persons have insufficient information about different jobs, courses of study, and other activities. They are thus unable to judge whether they would really like all that their choice actually involves.<sup>65</sup>

Using information from previously published longitudinal studies of interest which had employed the Kuder Preference Record, Bloom's work on interest stability revealed that "Before age 17 there appears to be very rapid development and change, while after this age the interests appear to stabilize such that there is as much consistency over a four year period (after 17) as there is over a one or two year period (under 17)."<sup>66</sup>

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<sup>64</sup>Astin, loc. cit.

<sup>65</sup>Anne Anastasi, Psychological Testing (second edition; New York: Macmillan Company, 1961), p. 565.

<sup>66</sup>Benjamin S. Bloom, Stability and Change in Human Characteristics (New York: John Wiley & Sons, 1964), pp. 162-166.

Super further backs up the importance of seeing that persons have all the knowledge possible in this area during the adolescent years when he stated:

Development of interests has been seen to be well under way by adolescence, for by age 14 or 15 the interest pattern of boys and girls have begun to take forms similar to those of adults, and these patterns are generally modified by a tendency, in boys at least, toward greater socialization of interests. By the time boys and girls are from 18 to 20 years of age their interests are fairly well crystallized, and in most cases change very little there after.<sup>67</sup>

The need for knowing about both the aptitudes and interests a person has seemed to be well stated by Anastasi:

Achievement is a resultant of aptitude and interest. Although these two variables are positively correlated, a high level in one does not necessarily imply a superior status in the other. An individual may have sufficient aptitude for success in a certain type of activity - educational, vocational, or recreational - without the corresponding interest. Or he may be interested in work for which he lacks the prerequisite aptitudes. A measure of both types of variables thus permits a more effective prediction of performance than would be possible from either alone.<sup>68</sup>

The work of Gesell, Ilg and Ames on the development of the adolescent from ten to sixteen stated that fourteen is a very "fluid" stage in which the youth "plays around with thoughts of his future but he 'hasn't made up his mind'".<sup>69</sup> Fourteen appears to be a

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<sup>67</sup>Donald E. Super, Appraising Vocational Fitness by Means of Psychological Tests (New York: Harper & Brothers, 1949), p. 441.

<sup>68</sup>Anastasi, op. cit., p. 564.

<sup>69</sup>Arnold Gesell, Frances L. Ilg, and Louise Bates Ames, Youth: The Years from Ten to Sixteen (New York: Harper & Row, 1956) p. 195.

receptive and people-oriented age. The occupations which deal in social work, politics, psychiatry, psychology, diplomatic work, and other ramifications that include people seem to have particularly strong appeal.<sup>70</sup> Considering this open and receptive general attitude, one might find this a very opportune time to provide some guidelines and knowledge to aid in the choices which will need to be made by the youth in the relatively near future.

The appropriateness of this material being presented in a democracy class seems to be born out by the view expressed by Chester K. Babcock in his Teacher's Manual for Civics in Action:

Recognition is being given to the fact that it is in the national interest for children and you to develop 1) an appreciation of their political, economic, and social heritage, and 2) the understandings and skills that will enable them to function intelligently as participating citizens....

It is not enough for pupils to learn the basic facts about the machinery of government, important as that knowledge is. The acquisition of information about the form and structure of political institutions does not, of itself, provide any guarantee of good citizenship. In civic education, we must be concerned not only with what a pupil knows about government, but with how he feels about it and, most important, how he acts as a result of his feelings. Basically good citizenship is evidenced by action rather than verbalism.<sup>71</sup>

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<sup>70</sup> Ibid.

<sup>71</sup> Chester D. Babcock, Teacher's Manual for Civics in Action (Sacramento, California State Department of Education, 1967), p. 1.



The basic purpose of the unit on vocational factors was to help the student gain the available knowledge which could aid him in the wise use of his skills and life.

Having considered the following points:

1. The evidence of the wide scope and importance of interest factors revealed by research,
2. the lack of evidence of attempting to make this knowledge available to youth in their early adult years,
3. the presence of the open and receptive attitude of the average fourteen-year-old student,
4. and the appropriateness of a democracy class as the place in which to present such information,

the efforts of this study were prompted.

## CHAPTER III

### DESIGN AND PROCEDURE

#### I. RESEARCH DESIGN

Type of Study. The study incorporated a control group experimental design. The experimental group was composed of four heterogeneous classes taught by one teacher (A). The control group consisted of two heterogeneous classes taught by a second teacher (B).

The combined groups comprised all but one class of 28 students of the ninth grade who were enrolled in democracy during the semester in which the study was made. Both teachers had taught for eight years and felt strongly about the importance of their subject area. Both have similar philosophies of discipline and purpose in teaching.

The school was a three year junior high serving families of the highest and lowest socio-economic groups in the city of Salina, Kansas. The middle socio-economic group is also well represented.

The Sample. The subjects of this study were the ninth grade students of two teachers who had a total of six heterogeneous classes taking an 18 week course in democracy. The classes range in size from 27 to 31 students. The final results reflected the scores of 146 students. About twenty students left the school at various points during the semester. Other students were lost as a result of being absent on one of the two days of the test-retest sequence.

There were 73 girls and 73 boys ranging in age from 14 years one month to 16 years of age who met the criteria established for this study. The experimental group had 96 subjects (48 girls and 48 boys). The 50 boys and girls in the control group were also divided evenly. Lower, middle, and upper income families were represented disproportionately. The Intelligence Quotients record for the group ranged from 55 to 135.

Measuring Devices. The Kuder Preference Record Occupational - Form D. was the measure used to obtain the scores for comparison. The purposes and qualities of this test were discussed at some length earlier in the paper.

The Primary Mental Abilities test scores were the source of the Intelligence Quotient measures used in the study. This test was administered to all students of the school for the individual student records. Validity for P.M.A. is relatively meager. No factorial validities are reported for the P.M.A.-S.R.A. version which was the form used.<sup>1</sup>

The Differential Aptitude Tests (D.A.T.) scores were given to the experimental group only. The D.A.T.-form L series covers the eight areas of verbal reasoning, numerical ability, abstract reasoning, space relations, mechanical reasoning, clerical speed and accuracy, language usage, and spelling and sentences. Reliability on each of the eight tests of both L and M forms has been computed by the split-half technique. All but the Clerical Speed

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<sup>1</sup> Anne Anastasi, Psychological Testing (second edition; New York: Macmillan Company, 1961), p. 368.

and Accuracy had a coefficient ranging from .85 to .93. The girls' coefficient on the Mechanical Comprehension was .71 making it less generally useful in the counseling of girls. Long-term consistency, empirical validity, and the three year longitudinal test of predictive validity all held up quite well.<sup>2</sup>

## II. PROCEDURE

Study Development. The Kuder Preference Record Occupational - Form D was given during the first week and readministered during the eighteenth week of the course to the students in all six classes. It was explained to them that the purpose of the survey was to help them understand their various interests and that it would in no way affect their grades.

The experimental group received the course organized to stress the institutional oriented democracy study and included the unit presenting the insights that have been gained from studies concerned with vocation selection factors. As part of the unit on vocational selection the students were shown their D.A.T. scores and received an explanation of the meaning of these scores as ability indicators. Results of the first interest survey were also given to and discussed with the students. Materials covering many vocations and information on the education required and existing educational centers were made available. The control group received a course designed basically around problems and procedures of democracy without the special unit on vocation selection insights.

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<sup>2</sup>Ibid, p. 373.

Method of Gathering Data. The P.M.A. is administered to all students of the school. These scores were obtained for all students in the study who were in the school at the time the test was given.

Socio-economic information was based on the place of residence of each subject. The school records were the source from which information on the subjects' residential address was acquired. Only broad levels of high, middle and low socio-economic status were used.

The two teachers conferred on the administering of the Kuder and agreed on the interpretation of the testing procedures. The tests were given during the regular class periods of the two selected days by the regular teacher of each class. The scores obtained by each of the subjects on both the first and second administration of the Kuder were computed for the fifty-two scales of the survey. The verification key was run on all the score sheets.

Method of Presenting Data. All the data was assembled for both the experimental and control groups. Comparisons were made on the co-ordinates of stability of the two groups on each of the fifty-two Kuder occupational scales. A two-tailed test of significance was run on the difference of the co-ordinates of stability of each of the fifty-two occupational scales of the two groups. Those scales which proved to have co-ordinates of stability with a significant difference between the two groups were listed in a table.

CHAPTER IV  
ANALYSIS AND FINDINGS

I. ANALYSIS

The students' answers from both administrations of the Kuder Preference Record were scored for all fifty-two occupational scales. The co-ordinates of stability were determined for all the occupational scales and the verification key for the experimental and control groups.

The co-ordinates of stability for the verification key were very similar for both groups, .0872 for the experimental group and .0080 for the control group. On thirty of the fifty-two scales the experimental group had a lower co-ordinates of stability than that of the control group. Table I shows the co-ordinates of stability of both groups for the fifty-two scales.

A two-tailed test of significance of the difference between two  $r$ 's at the .05 level<sup>1</sup> revealed that eight of the scales which had produced lower co-ordinates of stability for the experimental group had a significant difference. There were no significant differences in the co-ordinates of the scales having a higher stability by the experimental group. Table II shows the eight scales having a significant difference of the co-ordinates of stability.

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<sup>1</sup>Allen Edwards, Statistical Methods, second edition, (Chicago: Holt, Rinehart and Winston, Inc., 1967), p. 251.

TABLE I

THE CO-ORDINATES OF STABILITY OF 52 SCALES  
OF KUDER PREFERENCE RECORD OCCUPATIONAL  
FOR THE EXPERIMENTAL AND CONTROL GROUPS

| Occupational<br>Key          | Experimental<br>Group | Control<br>Group |
|------------------------------|-----------------------|------------------|
| County Agricultural<br>Agent | 0.2552                | 0.3359           |
| Electrical Engineer          | 0.5293                | 0.5093           |
| Farmer                       | 0.5703                | 0.5557           |
| Forester                     | 0.4266                | 0.7481           |
| Minister                     | 0.7976                | 0.6408           |
| Newspaper Editor             | 0.4785                | 0.6846           |
| Physician                    | 0.5147                | 0.6229           |
| Psychologist - Clinical      | 0.7082                | 0.6764           |
| Psychologist -<br>Industrial | 0.6389                | 0.5598           |
| YMCA Secretary               | 0.7588                | 0.6246           |
| School Superintendent        | 0.4621                | 0.6220           |
| Accountant                   | 0.4887                | 0.6390           |
| Meteorologist                | 0.2238                | 0.6221           |
| Personnel Manager            | 0.6929                | 0.5231           |
| Department Store Salesman    | 0.1711                | 0.4455           |
| Psychologist - Professor     | 0.6053                | 0.6371           |
| Civil Engineer               | 0.1566                | 0.6502           |
| Mechanical Engineer          | 0.5931                | 0.6385           |
| Psychologist -<br>Counseling | 0.7082                | 0.6764           |
| Journalist                   | 0.5265                | 0.7361           |

TABLE I (continued)

| Occupational<br>Key                  | Experimental<br>Group | Control<br>Group |
|--------------------------------------|-----------------------|------------------|
| Architect                            | 0.5594                | 0.6395           |
| Lawyer                               | 0.6443                | 0.7616           |
| Retail Clothier                      | 0.7250                | 0.7283           |
| Insurance Agent                      | 0.4272                | 0.5354           |
| Dentist                              | 0.5768                | 0.5716           |
| Veterinarian                         | 0.3116                | 0.5178           |
| Industrial Engineer                  | 0.5094                | 0.7776           |
| Pediatrician                         | 0.6345                | 0.6924           |
| Psychiatrist                         | 0.6523                | 0.7358           |
| Radio Station Manager                | 0.7703                | 0.4931           |
| Interior Decorator                   | 0.6308                | 0.6643           |
| Counselor -<br>High School           | 0.7838                | 0.8134           |
| Science Teacher -<br>High School     | 0.5050                | 0.5052           |
| Mathematics Teacher -<br>High School | 0.4990                | 0.5458           |
| Chemist                              | 0.1981                | 0.5459           |
| Mining and Metallurgical<br>Engineer | 0.4722                | 0.8570           |
| Druggist                             | 0.6786                | 0.5585           |
| Job Printer                          | 0.5061                | 0.4687           |
| X-Ray Technician                     | 0.4259                | 0.5732           |
| Bank Cashier                         | 0.5586                | 0.3873           |
| Pharmaceutical Salesman              | 0.6990                | 0.4256           |



TABLE I (continued)

| Occupational Key                        | Experimental Group | Control Group |
|---|--------------------|---------------|
| Librarian                               | 0.7369             | 0.7437        |
| Florist                                 | 0.6193             | 0.6063        |
| Engineer - Heating and Air Conditioning | 0.2396             | 0.3822        |
| Podiatrist                              | 0.7769             | 0.7403        |
| Auto Mechanic                           | 0.6459             | 0.5705        |
| Truck Driver - Long Distance            | 0.5920             | 0.5245        |
| Teaching Brother                        | 0.7133             | 0.6391        |
| Teaching Sister                         | 0.5371             | 0.5160        |
| Optometrist                             | 0.8310             | 0.7724        |
| Nurseryman                              | 0.5676             | 0.4474        |

TABLE II

KUDER OCCUPATIONAL SCALES WHICH HAD  
 \* SIGNIFICANTLY DIFFERENT CO-ORDINATES OF STABILITY

| Occupational Key      | Z-Score |
|-----------------------|---------|
| Journalist            | 1.99    |
| Chemist               | 2.28    |
| Engineer - Industrial | 2.65    |
| Forester              | 2.85    |
| Meteorologist         | 2.79    |

TABLE II (continued)

| Occupational Key                           | Z-Score |
|--|---------|
| Engineer - Heating and<br>Air Conditioning | 3.11    |
| Engineer - Civil                           | 3.43    |
| Engineer - Mining and<br>Metallurgical     | 4.28    |

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\*significant at the .05 level (1.96)

## II. FINDINGS

Though eight out of fifty-two scales do not seem to meet the requirements of the hypothesis in producing a "consistent tendency" for the co-ordinates of stability of the experimental group to be lower, it would seem to support the idea that integration of students' interests and formal learning did result in some significant changes.

The need for more extensive research into the structure of interest measuring devices in order to aid in the understanding and study of interests is most apparent.

## III. SUGGESTED RESEARCH

The significant differences found for the eight scales would seem to support the value of further investigation along the following lines:

1. To explore other factors which might influence the stability of these interests such as the sex, socio-economic level, and intellectual ability.
2. To discover whether the direction of the change of the stability was toward or away from each of the eight areas.
3. To see if the change in interest is toward areas of greater aptitude.
4. To determine if the eight areas have some variable in common.
5. To run a similar study to see if significant differences reoccurred and if so if they remained in the same areas.
6. To follow longitudinal studies as to the degree of retention of the acquired changes.
7. To study the significance of the verification key on the value of the answers on the scales.

8. To look into the importance of the co-ordinates of stability of the verification key in a test-retest pattern.
9. To study the amassed data in interscale and interitem analysis to gain knowledge of the factor in the test structure.

#### IV. SUMMARY

In summary:

1. Abundant research has revealed the existence of many factors which enter the development of interest.
2. No conclusive evidence has been presented to demonstrate the dominance of any of these factors.
3. At present adult interest patterns appear to begin to develop around the age of 14 years.
4. There is a period of rather unstable interests for about six years which culminates in a fairly well established pattern at about the age of 20 years.
5. During this period of unstable interests greater than usual changes of interest can be brought about by relating formal learning to the individual's interests.
6. The need for greater research into the structure of interest measuring devices in order to aid in the understanding and study of this area is most apparent.

This study would seem to support the direction of research which is being followed by such persons as Roe, Bordin and Wilson. The complexity of interest formation having been established, researchers would do well to direct their efforts along two general paths: the further analysis and development of the interest measuring devices and an increased number of studies using a pattern of inductive empirical controlled experiments to aid in the understanding of interest.

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## APPENDIX

## APPENDIX

### Formula For The Significance Of The Difference Between Two R's

To make the test of significance, we transform both  $r_1$  and  $r_2$  into  $z'$  values. The standard error of the difference between two independent values of  $z'$  will be given by the usual formula for the standard error of the difference between two independent variables or, in the case of two  $z'$  values,

$$\begin{aligned}\sigma_{z_1' - z_2'} &= \sqrt{\sigma_{z_1'}^2 + \sigma_{z_2'}^2} \\ &= \sqrt{\frac{1}{n_1 - 3} + \frac{1}{n_2 - 3}}\end{aligned}$$

Then, the difference between  $z_1'$  and  $z_2'$ , divided by the standard error of the difference results in

$$z = \frac{z_1' - z_2'}{\sigma_{z_1' - z_2'}}$$

Using the  $r$ 's for the Journalist from TABLE I, the following is an example of the employment of the above formulae.

$$\sigma_{z_1' - z_2'} = \sqrt{\frac{1}{96 - 3} + \frac{1}{50 - 3}}$$

$$\sigma_{z_1' - z_2'} = .18$$

$$z = \frac{.584 - .942}{.18} *$$

$$z = 1.99$$

\* Values of r to z scores based on table of z' Values constructed by F. P. Kilpatrick and D. A. Buchanan shown on page 427 of Statistical Methods, Allen Edwards. Chicago: Holt, Rinehart and Winston, 1967.

|         | <u>r</u> |           | <u>z</u> |
|---------|----------|-----------|----------|
| $r_1$ , | 0.5265   | = $z_1$ , | .584     |
| $r_2$ , | 0.7361   | = $z_2$ , | .942     |

THE EFFECT OF A DEMOCRACY COURSE  
ON THE INVENTORIED INTERESTS  
OF NINTH GRADE STUDENTS

by

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One of the challenges of education today is the transfer of formal learning by the recipient to the practical application of that learning in the world. An attempt to integrate formal learning and the interests of the learner might facilitate this transfer. It would seem to be of value for the educator to know if there would be any significant change in the student's inventoried interests following a course in democracy designed to inform the student in particular about

1. the major institutions of his world,
2. insights into vocation selection,
3. and information about his abilities and interests.

There has been a considerable amount of research on interest factors, but no well substantiated conclusions other than the idea that many factors enter the forming of interest have been reached. The more recent studies point in the direction which this experiment took as the one offering the most promise for valuable information.

Believing that a well designed democracy course should show some influence on the student's interest, one would find there would be a consistent tendency for the coefficient of stability for the scores of a standardized interest inventory given prior to and following a course in democracy of the experimental group of ninth grade students to be lower than that of the control group.

The subjects employed in the study were ninth grade students (male and female) ranging from 14 years 1 month to 16 years of age. They were all the democracy students in a total of six heterogeneous classes of two teachers. Both teachers felt strongly about the importance of the course and had similar teaching experience and philosophy. The school was a three year junior high serving the families of the highest and lowest socio-economic groups in the city. The middle socio-economic group was also well represented.

A control group experimental design using the Kuder Preference Record Occupational - Form D in a test-retest pattern was determined to be the best suited for the purposes of the study. The interest inventory was given to all subjects during the first week and again during the last week of the course. It was explained to the students that the purpose of the survey was to help them understand their various interests and that it would in no way affect their grades.

The experimental group of 96 subjects received the course organized to stress the institutional oriented democracy study. During the unit concerned with vocation selection factors the students were given their D.A.T. scores, the results of the first week's interest inventory, and all available information on vocations and the training each requires. The control group of 50 subjects received a course designed around the procedures and problems of democracy.

Each student's answers to the Kuder survey were scored for all 52 occupational scales. A matrix of the co-ordinates of stability of the two tests for each of the scales was computed. The co-ordinates of stability were lower for the experimental group on thirty of the fifty-two occupational scales. A two-tailed test of significance of the difference between two  $r$ 's was run on the differences of the co-ordinates of stability of the experimental and control groups for the individual occupational scales. Eight scales were found to be significantly different at the .05 level.

Though eight out of fifty-two scales do not seem to meet the requirements of the hypothesis in producing a "consistent tendency" for the co-ordinates of stability of the experimental group to be lower, it would seem to support the idea that integration of students' interest and formal learning did result in some significant changes.

This study would seem to support the need for more extensive research into the structure of interest measuring devices in order to aid in the understanding and study of interest and an increased number of interest studies using a pattern of inductive empirical controlled experiments.