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AUTHOR England, Robert G.; Pollack, Robert M.
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ABSTRACT

The field test design information packet was devised for use by persons representing institutions using the Mountain-Plains curriculum products. The primary purpose of field testing the curriculum is to get third party profession and student reaction to what has proved to be successful with students and instructors at Mountain-Plains. The importance of using the materials in the format especially designed for them is emphasized. Part 1 briefly discusses the curriculum field test information packet. Part 2--design and instruments--concentrates on the various evaluation instruments used in the monitoring of materials. Part 3 explains in detail the orientation session for instructors who will be using the Mountain-Plains curriculum packages in an actual teaching situation without supervision. Information sheets are provided for (1) research procedures, (2) Independent Student Progress Rationale, (3) ABC's of the testing program, (4) how to use SPR's (Student Progress Reports), and (5) procedures for LAP/LEG (Learning Activity Package/Learning Experience Guide) test use and disposition. Part 4 concludes the document with a copy of the contractual agreement between Mountain-Plains and the contracting agency using the Mountain-Plains products. (BP)

A REGIONAL PROGRAM IN
COMPREHENSIVE FAMILY EDUCATION

# DESIGN FOR FIELD TESTING OF MOUNTAIN-PLAINS CURRICULUM

GLASGOW AFB, MONTANA 59231

MOUNTAIN-PLAINS EDUCATION ECONOMIC DEVELOPMENT PROGRAM, INC.

# DESIGN FOR FIELD TESTING OF MOUNTAIN-PLAINS CURRICULUM

PRINCIPAL AUTHOR

**ROBERT G. ENGLAND**
Senior Curriculum Specialist

CONTRIBUTING AUTHOR

**ROBERT M. POLLACK**
Tests & Measurement Specialist

A Product of
Research Services Division

David A. Coyle
Director

January 1, 1975

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# FIELD TEST EVALUATION DESIGN

CD-1

MAJOR HYPOTHESES

| Questions of Interest | Experimental Variables | Experimental Hypothesis | Methodology | Statistical Procedure |
|---|---|---|---|---|
| 1. Does the process get the content across? | Cognitive test scores<br>Performance test scores | Ho: $U_1=0$ $U_2=0$<br>Alt: $U_1>0$ $U_2>0$<br>(cog) (perf) | Administer written course test on pre/post basis by MP or designated rep. of MP. Administer written test on Unit basis by Instructor. Administer perf. test on Unit basis by Instructor. | T test + correlation between cognitive and perf. |
| 2. Does the curriculum work better on site or at MP? | Cognitive test scores<br>Performance test failure rate | Ho: $U_1=U_2$ $U_1=U_2$<br>Alt: $U_1>U_2$ $U_1>U_2$<br>$U_1<U_2$ $U_1<U_2$<br>(cog) (perf) | Administer written course test on pre/post basis by MP or designated rep. of MP. Administer written test on Unit basis by Instructor. Administer perf. test on Unit basis by Instructor. | ANOVA |
| 3. Does the curriculum work better than other types of curriculum currently in use at site. | Cognitive test scores | Ho: $U_1=U_2$<br>Alt: $U_1>U_2$ | Administer written course test to MP users and standard users on pre/post basis by MP or designated rep. of MP. | ANOVA |
| 4. Is the MP curriculum more effective with some populations as opposed to others? (The term populations refers to groups defined by sex, socio-economic class, and other demographic variables.) | Cognitive test scores | Ho: $U_1=U_2=U_3=\ldots U_n$<br>Alt: $U_1\neq U_2\neq U_3\neq\ldots U_n$ | Administer written course test to MP users and standard users on pre/post basis by MP or designated rep. of MP. | ANOVA |

## INTRODUCTION

This information packet is intended for use by persons representing institutions which are using Mountain-Plains curriculum products. It answers preliminary questions such persons may have concerning Mountain-Plains curriculum content, design and procedures.

The products and procedures presented herein are being developed by Mountain-Plains Education & Economic Development Program, Inc., which is Career Education Model IV sponsored by the National Institute of Education and the U. S. Office of Education. Mountain-Plains is a research and development project in Northeastern Montana and serves Montana and the five adjacent states of Wyoming, North and South Dakota, Nebraska, and Idaho.

Although primarily a Research & Development project, a near stable population of 200 families receive various types of training at Mountain-Plains over an average time span of ten months per family on center.

Classes are conducted for the most part, on a purely individualized basis, each student completing his chosen classes at his own rate when criterion-referenced cognitive and performance tests indicate that he can really perform the tasks and jobs associated with his career choice.

Preliminary on-center field testing, and other indicators suggest, that Mountain-Plains products and procedures are working with Mountain-Plains student population. Now we wish to see how they work with yours.

# CURRICULUM FIELD TESTING

## Introduction

As an adjunct to the development of curriculum products, Mountain-Plains Research Services Department has devised a Field Test Design which allows a third party critique of these products.

After a course has been validated at the Mountain-Plains Center and found to be a quality product, it is then made available to schools and other institutions for field testing and further critique before final revision prior to marketing.

These field test efforts are to be considered an extension of Curriculum Validation, and are to provide further refinement of products before they can be considered in a marketable state. It is suspected that there will be certain products which for any of a variety of reasons, will be temporarily or permanently withheld from marketing. Such determination will be supported by field test results.

## Site Selection

A site search and selection is being conducted jointly by members of the Montana State Department of Public Instruction and Mountain-Plains Research Services Department Staff. In addition, various schools, some not of the six state area influenced by Mountain-Plains, have expressed a desire to have certain Curriculum Areas field tested at their institutions. Selection is to be made on appropriateness of Curriculum Areas to school, adequacy of staff, facilities and equipment, and other factors to be determined by the selection committee.

It is anticipated that, as a result of some variety in site selection, a partial determination may be made as to appropriateness of certain products to audience types. For instance, is Product A applicable to a public secondary school setting as well as an adult penal institution. Present plans suggest that sites include selections from, but not exclusively of, Secondary, Post Secondary and Trade Schools, and Institutions such as Penal Institutions, and Reform Schools, etc.

## Procedure

Schools testing the products enjoy certain benefits and bear some responsibilities. Benefits include using a refined individualized curriculum product, having instructors and other staff oriented to its use by trained professional Mountain-Plains Curriculum Development Staff, and exposure to resource persons and facilities at the Mountain-Plains Center at Glasgow Air Force Base, Montana. There are some monetary benefits to be derived. A determination as to the extent of such benefits is under advisement.

Test site staff will have certain responsibilities. As seen elsewhere in this packet, instructors and students will be asked for occasional responses to questionnaires. Instructors will be asked to attend periodic, infrequent orientation sessions both formally and on a conversational basis to ensure control over procedure.

Procedurally, Mountain-Plains Curriculum Development Staff interact with appropriate test site staff for orientation and advising on mechanics of field testing. The curriculum product is introduced and it and procedures for use are examined in detail. The stage is set for future contact with Mountain-Plains Curriculum Development Staff. Sufficient learning materials are left at the test site. Subsequent contacts are made by phone or in person by Mountain-Plains Staff and on-center visits by test site personnel are arranged if, and when necessary.

TIME RELATED REQUIREMENT CHART
CURRICULUM FIELD TEST DESIGN

1. Senior Curriculum Specialist
2. Curriculum Analyst
3. RSD

STAGE I
DEVELOPMENTAL STAGE

| Responsibilities and Requirements | July | Aug. | Sept. | Oct. | Nov. | Dec. | Jan. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. First Draft of Curriculum | 1 | | | | | | | | | | | |
| 2. Field Test Design w/Instruments 1st Cut | 1,2 | | | | | | | | | | | |
| 3. Field Test Design w/Instruments; Reviewed and Revised as Necessary by RSD | | | 1,3 | | | | | | | | | |
| 4. 2nd Review of Design & Instrument | | | | | 1,2,3 | | | | | | | |
| 5. Prototype Field Test Design w/Instruments Ready for Initial Use | | | | | | 1,3 | | | | | | |
| 6. Identify Potential Test Sites | | Continuing | | | | | | | | | | |
| 7. Select Test Site Candidates | | | | | | | 1,3 | | | | | |
| 8. Match Test Sites to Curriculum Packages | | | | | | | 1,3 | | | | | |
| 9. Publicize Field Test Intentions in Mountain-Plains Newsletter | | ASAP | (Include test sites when identified) | | | | | | | | | |
| 10. Design and Draft Field Test Information Packets for Site Personnel | | 1 | | | | | | | | | | |
| 11. Design Resources & Redesign | | | | | 1 | | | | | | | |
| 12. Design and Draft Teacher Training Packets | | | 1 | | | | | | | | | |
| 13. Redesign Teacher Training Packets | | | | | 1 | | | | | | | |

TIME RELATED REQUIREMENT CHART
CURRICULUM FIELD TEST DESIGN

1. Senior Curriculum Specialist
2. Curriculum Analyst
3. Other RSD Personnel

STAGE II
IMPLEMENTATION STAGE

| Responsibilities and Requirements | Dec. | Jan. | Feb. | Mar. | Apr. | May | Jun. | July | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Start testing Field Test Instruments on Center | 1,2 | | | | | | | | | | |
| 2. Conclude On-Center Field Testing | | | | 1,2 | | | | | | | |
| 3. Final Draft for Field Test Instruments | | | 1,3 | | | | | | | | |
| 4. Begin Teacher Training | | | 1,2 | | | | | | | | |
| 5. Complete Teacher Training | | | Continuing | | | | | | | | |
| 6. Introduce Curriculum Material to off-Center Test Site | | | 1,2 | | | | | | | | |
| 7. Conclude Introduction of Any Further Curriculum Material | | | OPEN | | | | | | | | |

TIME RELATED REQUIREMENT CHART
CURRICULUM FIELD TEST DESIGN

1. Senior Curriculum Specialist
2. Curriculum Analyst
3. Other RSD Personnel

STAGE III
EVALUATION/SUMMARIZATION STAGE

| Responsibilities and Requirements | Jan. | Feb. | Mar. | Apr. | May | Jun. | Jul. | Aug. | Sept. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Systematic Data Retrieval Begins (Details yet to be determined) | 2 | | | | | | | | | | |
| 2. Data Processing Begins | | | | | | 1,3 | | | | | |
| 3. Data Analysis Begins | | | | | | | 1,3 | | | | |
| 4. Summarization of Findings in Periodic Report Form (Quarterly) | | | | | | | | 1 | | | |
| 5. Final Report to Mountain-Plains and Other Audience | | | | | | | | | 1,3 | | |
| 6. Revision of Instruments and Design Where Necessary (On cue from data analysis) | | | Continuing | | | | | | | | |

Part II

# Field Test Design and Instruments

# FIELD TEST EVALUATION DESIGN

CD-1

MAJOR HYPOTHESES

| Questions of Interest | Experimental Variables | Experimental Hypothesis | Methodology | Statistical Procedure |
|---|---|---|---|---|
| 1. Does the process get the content across? | Cognitive test scores<br>Performance test scores | Ho: $U_1=0$ $U_2=0$<br>Alt: $U_1>0$ $U_2>0$<br>(cog) (perf) | Administer written course test on pre/post basis by MP or designated rep. of MP. Administer written test on Unit basis by Instructor. Administer perf. test on Unit basis by Instructor. | T test + correlation between cognitive and perf. |
| 2. Does the curriculum work better on site or at MP? | Cognitive test scores<br>Performance test failure rate | Ho: $U_1=U_2$ $U_1=U_2$<br>Alt: $U_1>U_2$ $U_1>U_2$<br>$U_1<U_2$ $U_1<U_2$<br>(cog) (perf) | Administer written course test on pre/post basis by MP or designated rep. of MP. Administer written test on Unit basis by Instructor. Administer perf. test on Unit basis by Instructor. | ANOVA |
| 3. Does the curriculum work better than other types of curriculum currently in use at site. | Cognitive test scores | Ho: $U_1=U_2$<br>Alt: $U_1>U_2$ | Administer written course test to MP users and standard users on pre/post basis by MP or designated rep. of MP. | ANOVA |
| 4. Is the MP curriculum more effective with some populations as opposed to others? (The term populations refers to groups defined by sex, socio-economic class, and other demographic variables.) | Cognitive test scores | Ho: $U_1=U_2=U_3=\ldots U_n$<br>Alt: $U_1\neq U_2\neq U_3\neq\ldots U_n$ | Administer written course test to MP users and standard users on pre/post basis by MP or designated rep. of MP. | ANOVA |

# FIELD TEST EVALUATION DESIGN

MAJOR HYPOTHESES

| Questions of Interest | Experimental Variables | Experimental Hypothesis | Methodology | Statistical Procedure |
|---|---|---|---|---|
| 5. Are the curriculum packages liked by students? | CD-7 | Ho: $U_1 < 66$<br>Alt: $U_1 > 66$ | Instrument CD-7 administered by MP personnel both at MP and on site. | ANOVA |
| 6. Are there differences between students at different sites (including MP) with regard to how much they like MP curriculum? | Score on CD-7 | Ho: $U_1=U_2=U_3=\ldots U_n$<br>Alt: $U_1\neq U_2\neq U_3\neq\ldots U_n$ | Instrument CD-7 administered by MP personnel both at MP and on site. | ANOVA |
| 7. Do students perceive LAPs to be difficult to work with? | Score on CD-7 | Ho: $U_1 > 66$<br>Alt: $U_1 < 66$ | Instrument CD-7 will be self-administered by students and collected by Instructors. | ANOVA |
| 8. Do students at different sites (including MP) have different perceptions of the difficulty of using LAPs? | Score on CD-7 | Ho: $U_1=U_2=U_3=\ldots U_n$<br>Alt: $U_1\neq U_2\neq U_3\neq\ldots U_n$ | Instrument will be self-administered by student and collected by Instructors. | ANOVA |
| 9. Are there differences between LAPs within and between curriculum areas with regard to perceived difficulty? | Score on CD-5 | Ho: $U_1=U_2=U_3=\ldots U_n$<br>Alt: $U_1\neq U_2\neq U_3\neq\ldots U_n$<br>(same hypothesis for between and within CAs) | Instrument CD-5 will be self-administered by student and collected by Instructors. | ANOVA |

MAJOR HYPOTHESES

| Questions of Interest | Experimental Variables | Experimental Hypothesis | Methodology | Statistical Procedure |
|---|---|---|---|---|
| 10. Do instructors find MP curriculum procedures to be superior to standard classroom approaches? | CD-4 | Ho: $U_1 > 45$<br>Alt: $U_1 < 45$ | To be filled out by Instructors on site and forwarded to MP. | ANOVA |
| 11. Do instructors perceive MP curriculum to be well designed and of good quality? | CD-3 | Ho: $U_1 > 45$<br>Alt: $U_1 < 45$ | To be filled out by Instructors on site and forwarded to MP. | ANOVA |
| 12. Is the orientation currently in use sufficient to enable instructors to use MP curriculum without too much outside assistance? | CD-6 | Ho: $U_1 < 2$<br>Alt: $U_1 > 2$ | Special (not regularly scheduled) Instructor contacts with MP Curriculum Department to request information on how to use MP curriculum. Will be recorded on Form CD-6. | ANOVA |
| 13. Is MP curriculum being used in accordance with orientation instructions? | CD-2 | Ho: $U_1 > 8$<br>Alt: $U_1 < 8$ | MP Curriculum Department will spot check field test sites on a random basis. Monitoring will be done by MP on an unannounced basis. | ANOVA |

MINOR HYPOTHESES

| Questions of Interest | Experimental Variables | Experimental Hypothesis | Methodology | Statistical Procedure |
|---|---|---|---|---|
| 14. Are there differences between CAs with regard to student performance? | Performance test error rate | Ho: $U_1=U_2=U_3=\ldots U_n$<br>Alt: $U_1\neq U_2\neq U_3\neq\ldots U_n$ | Performance tests will be collected on all students. Error rate equals percent of failure. | ANOVA |
| 15. Are there differences between CAs with regard to amount of knowledge gained? (This question will be dealt with only if appropriate scaling procedures are available.) | Cognitive test | Ho: $U_1=U_2=U_3=\ldots U_n$<br>Alt: $U_1\neq U_2\neq U_3\neq\ldots U_n$ | Cognitive tests will be scaled to obtain comparable scores. | ANOVA |
| 16. Are there differences between CAs with regard to how well MP curriculum packages are liked by students? | CD-7 | Ho: $U_1=U_2=U_3=\ldots U_n$<br>Alt: $U_1\neq U_2\neq U_3\neq\ldots U_n$ | Will be administered on site to all students using MP curriculum | ANOVA |
| 17. Are there differences between CAs with regard to student perception of difficulty of using MP curriculum? | CD-7 | Ho: $U_1=U_2=U_3=\ldots U_n$<br>Alt: $U_1\neq U_2\neq U_3\neq\ldots U_n$ | Will be administered on site to all students using MP curriculum | ANOVA |

MINOR HYPOTHESES

| Questions of Interest | Experimental Variables | Experimental Hypothesis | Methodology | Statistical Procedure |
|---|---|---|---|---|
| 18. Are there differences between CAs with regard to instructor perception of MP curriculum? | CD-3<br>CD-4 | Ho: $U_1=U_2=U_3=\ldots U_n$<br>Alt: $U_1\neq U_2\neq U_3\neq\ldots U_n$ | instruments will be administered to all instructors using MP curriculum. | ANOVA |
| 19. Do students who like MP curriculum achieve more than students who don't? | Cognitive test scores and CD-7 | Ho: $R=0$<br>Alt: $R>0$ | Cognitive test scores and evaluations will be correlated. | Pearson r + T test |
| 20. Is there a relationship between instructor perception of MP curriculum and student performance? | CD-3<br>CD-4 | Ho: $U_1=U_2=U_3=\ldots U_n$<br>Alt: $U_1\neq U_2\neq U_3\neq\ldots U_n$ | Instructors will be classified as either highly favorable or highly unfavorable toward MP curriculum based on their evaluations on CD-3 and CD-4. Students will be compared with regard to achievement on cognitive test scores. | ANOVA |
| 21. Are there differences in student achievement between places that do and do not use MP curriculum in accordance with orientation instructions? | Cognitive test scores and CD-2 | Ho: $U_1=U_2=U_3=\ldots U_n$<br>Alt: $U_1\neq U_2\neq U_3\neq\ldots U_n$ | CD-2 or curriculum monitoring form will be used to identify which sites are using MP curriculum properly as opposed to those sites not using it. The cognitive test scores will be used to compare student achievement at those test sites. | ANOVA |

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MOUNTAIN-PLAINS CURRICULUM MONITORING FORM CD-2

January 1975

Teacher _____ Test Site # _____

Date _____ Grade Level _____ CA # _____ Other _____

| QUESTIONS | RESPONSES Yes | No |
|---|---|---|
| 1. Are raw test scores logged on SPRs? Criterion: On a test sample of 10, 9 scores are logged. Job title level pre and post test scores are entered by the test center. Unit post and performance test scores are entered by the instructor. LAP test scores are entered by the student on answer sheets. Job title post test scores are entered on the SWP by the test center. | | |
| 2. Are prevalidation procedures being followed? Criterion: SPRs contain prevalidation entry marks which match those on SWPs. No students are found involuntarily using LAPs that are marked on SPR as having been prevalidated. (Students may work in prevalidated LAPs when this is review following failure on performance test.) | | |
| 3. Are students using LEGs? Criterion: 9 out of 10 randomly selected students can describe a LEG and report that they are using them. | | |
| 4. Are students using LAPs? Criterion: 9 out of 10 randomly selected students can relate their activities to a procedure on a specific LAP. | | |
| 5. Are students using LAPs as prescribed? Criterion: 9 out of 10 students observed proceed from one LAP to the next without instructor interaction, except where by necessity student tasks are not ordered the same as LAPs. | | |

MOUNTAIN-PLAINS CURRICULUM MONITORING FORM CD-2

| QUESTIONS | RESPONSES Yes | No |
|---|---|---|
| 6. Does instructor-student interaction conform to M-P curriculum design? Criterion: Over a one hour observation period, a maximum of 5 minutes is spent interacting with all students at once. | | |
| 7. Is instructor available as a resource person? Criterion: 8 out of 10 randomly selected students report instructor is available to help them when needed within a reasonable length of time. | | |
| 8. Are LAP tests properly used? Criterion: Observation and/or student report indicates students are taking and scoring LAP tests themselves. | | |
| 9. Are Unit tests properly used? Criterion: All observed instances show performance tests administered before scoring of written tests. All observed instances indicate that instructor is conducting both cognitive and performance tests in a manner which compels students to respond to test items without benefit of external information other than that prescribed by testing constraints. | | |
| 10. Is test data being properly collected? Criterion: Written Unit test answer sheets attached to performance tests; both tests given at the same time; LAP test answer sheets properly stored; course test answer sheets properly labeled as to pre and post; and all answer sheets collected and stored and have required information on them. | | |
| 11. Is the instructor observing all the guidelines for use of the SWP? Criterion: The key to SWP use is observed to be used in filling out the SWP. Data is recorded as a LAP (or unit if this is the smallest component required of that job title) is completed. Other information required by the form is entered in appropriate spaces. | | |

MOUNTAIN-PLAINS CURRICULUM MONITORING FORM CD-2

| QUESTIONS | RESPONSES Yes | No |
|---|---|---|
| 12. Is the Student Progress Record being used as designed? Criterion: Students or instructional staff fill out identifying information completely, accurately and neatly. Students fill in the first three columns as required. Instructor initials the appropriate column at the termination of a learning segment, indicating accurate and timely conformity to irstructions by students. | | |
| 13. Are Curriculum Materials appropriately stored and used by students? Criterion: LAPs, LEGs and resource materials are kept in a place which is accessible to students. | | |
| TOTAL | /13 | |

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# TEACHER EVALUATION OF LEARNING MATERIALS

CD-3 November 11, 1974

---

Teacher_____ Test Site #_____

Date_____ Grade Level_____ CA #_____ Other_____

---

Directions:

On the left-hand side of the page is a statement about the material that you may or may not agree with. Please mark the scale on the right side of the page with a check mark according to the following choices.

_____ _____ _____ _____ _____ _____ (only check one column per item)
1 2 3 4 5 6

1. Means "I strongly agree with this statement about learning materials".
2. Means "I mostly agree with this statement about learning materials".
3. Means "I agree more than I disagree with this statement about learning materials".
4. Means "I disagree more than I agree with this statement about learning materials".
5. Means "I mostly disagree with this statement about learning materials".
6. Means "I strongly disagree with this statement about learning materials".

| | Strongly Agree | Mostly Agree | Slightly Agree | Slightly Disagree | Mostly Disagree | Strongly Disagree |
|---|---|---|---|---|---|---|
| 1. Objectives are stated in a way that has meaning to students. | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. Objectives are written at the level of understanding of my student population. | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. Curriculum content is related to vocational needs for students. | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. The LAP tests are appropriate for the LAP objective. | 1 | 2 | 3 | 4 | 5 | 6 |
| 5. The curriculum content is appropriately sequenced. | 1 | 2 | 3 | 4 | 5 | 6 |
| 6. The learning materials are clear and concise. | 1 | 2 | 3 | 4 | 5 | 6 |
| 7. The learning materials are easily understood by my students. | 1 | 2 | 3 | 4 | 5 | 6 |
| 8. The unit level objectives are consistent with the LAP level objectives. | 1 | 2 | 3 | 4 | 5 | 6 |
| 9. The performance tests are consistent with unit objectives. | 1 | 2 | 3 | 4 | 5 | 6 |
| 10. Curricular materials are relevant to the stated objectives. | 1 | 2 | 3 | 4 | 5 | 6 |
| 11. The curricular materials contain enough information so students know exactly what is expected of them. | 1 | 2 | 3 | 4 | 5 | 6 |
| 12. The curriculum materials are well organized. | 1 | 2 | 3 | 4 | 5 | 6 |
| 13. The curriculum materials allow for a maximum amount of independent study on the part of students. | 1 | 2 | 3 | 4 | 5 | 6 |
| 14. Students are able to get the information necessary to progress through the curriculum from the learning materials. | 1 | 2 | 3 | 4 | 5 | 6 |
| 15. Extensive training is not required before an instructor can manage M-P curriculum. | 1 | 2 | 3 | 4 | 5 | 6 |

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TEACHER EVALUATION OF M-P CURRICULUM PROCEDURES

CD-4 November 11, 1974

---

Teacher_____Test Site #_____

Date_____Grade Level_____CA #_____Other_____

---

Directions:

On the left-hand side of the page is a statement about the material that you may or may not agree with. Please mark the scale on the right side of the page with a check mark according to the following choices.

_____ _____ _____ _____ _____ _____ (only check one column per item)
1 2 3 4 5 6

1. Means "I strongly agree with this statement about curriculum procedures".
2. Means "I mostly agree with this statement about curriculum procedures".
3. Means "I agree more than I disagree with this statement about curriculum procedures".
4. Means "I disagree more than I agree with this statement about curriculum procedures".
5. Means "I mostly disagree with this statement about curriculum procedures".
6. Means "I strongly disagree with this statement about curriculum procedures".

| | Strongly Agree | Mostly Agree | Slightly Agree | Slightly Disagree | Mostly Disagree | Strongly Disagree |
|---|---|---|---|---|---|---|
| 1. Students appear to learn more using M-P methods. | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. Students can cover more material per term using M-P methods. | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. Competent teachers should have no trouble adjusting to M-P curricular methods. | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. Students appear to be happier using M-P curricular methods. | 1 | 2 | 3 | 4 | 5 | 6 |
| 5. I have more time to spend with students who need individual attention. | 1 | 2 | 3 | 4 | 5 | 6 |
| 6. Faster students are able to make exceptional progress. | 1 | 2 | 3 | 4 | 5 | 6 |
| 7. Slower students are making more progress than expected. | 1 | 2 | 3 | 4 | 5 | 6 |
| 8. I prefer using M-P procedures. | 1 | 2 | 3 | 4 | 5 | 6 |
| 9. M-P curriculum is more effective in helping students prepare for work after graduation. | 1 | 2 | 3 | 4 | 5 | 6 |
| 10. Students find M-P curriculum materials less difficult with regard to reading levels required. | 1 | 2 | 3 | 4 | 5 | 6 |
| 11. M-P curriculum appears to generate more student interest in learning. | 1 | 2 | 3 | 4 | 5 | 6 |
| 12. I find students are more independent of the instructor using M-P curriculum. | 1 | 2 | 3 | 4 | 5 | 6 |
| 13. Students find it easy to learn how to use M-P curriculum. | 1 | 2 | 3 | 4 | 5 | 6 |
| 14. I find that I can make better professional use of my time using M-P curriculum. | 1 | 2 | 3 | 4 | 5 | 6 |
| 15. If I had my choice, I would prefer to continue using M-P curricular procedures. | 1 | 2 | 3 | 4 | 5 | 6 |

*Mountain-Plains Education & Economic Development Program, Inc.*

POST OFFICE BOX 3078 · GLASGOW AFB, MONTANA 59231 · TEL: (406) 524-6221

STUDENT RESPONSE SHEET FOR LEARNING ACTIVITY PACKAGES

CD-5 November 1[illegible], 19[illegible]4

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Teacher_____Test Site #_____

Date_____Grade Level_____CA #_____Other_____

---

Directions:

On the left-hand side of the page is a statement about the material that may or may not be true of the material. Please mark the scale on the right side of the page with a check mark according to the following choices.

_____ _____ _____ _____ _____ _____ (only check one column per item)
1 2 3 4 5 6

1. Means "This statement is almost always true about the Learning Activity Packages I have used."

2. Means "This statement is mostly true about the Learning Activity Packages I have used."

3. Means "This statement tends to be more true than false with regard to the Learning Activity Packages I have used."

4. Means "This statement is false slightly more than half the time with regard to the Learning Activity Packages I have used."

5. Means "This statement is often false with regard to the Learning Activity Packages I have used."

6. Means "This statement is almost always false with regard to the Learning Activity Packages I have used."

| | Almost Always True | Mostly True | Slightly True | Slightly False | Mostly False | Almost Always False |
|---|---|---|---|---|---|---|
| 1. The objective was helpful in doing the LAP. | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. The procedures and directions were easy to understand. | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. The LAP test was related to the LAP. | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. I was able to complete this LAP without any assistance from my instructor. | 1 | 2 | 3 | 4 | 5 | 6 |
| 5. I found the LAP contents to be useful. | 1 | 2 | 3 | 4 | 5 | 6 |
| 6. This LAP was easy for me to read and understand. | 1 | 2 | 3 | 4 | 5 | 6 |
| 7. This LAP contains the right amount of material. | 1 | 2 | 3 | 4 | 5 | 6 |
| 8. I enjoyed working with this LAP. | 1 | 2 | 3 | 4 | 5 | 6 |
| 9. This LAP is related to the performance test that goes with the unit it is in. | 1 | 2 | 3 | 4 | 5 | 6 |
| 10. This LAP appears in the right place in this unit. | 1 | 2 | 3 | 4 | 5 | 6 |

Mountain-Plains Education & Economic Development Program, Inc.

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TEST SITE MONITORING FORM

CD-6 November 13, 1974

Amount and frequency of telephone contacts with test sites are one indication of the quality of teacher orientation. Please log each phone call, indicating on the check list the nature of the conversation. Use one sheet for each contact, filling in all the information blanks.

M-P CONTACT PERSON: SITE CONTACTED:

_____ _____ _____
Site Person

Date: _____

PROBLEM AREA . .(CIRCLE AS APPLICABLE THE NUMBER)

1. Learning Experience Guides
2. Learning Activity Packages
3. LAP Tests
4. Unit Tests
5. Performance Tests
6. Data Retrieval
7. Field Test Instruments
8. Use of instruments (affective)
9. Student Progress Records
10. Other (specify)

Comment:

*Mountain-Plains Education & Economic Development Program, Inc.*

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CD-7

# STUDENT EVALUATION OF CURRICULUM MATERIALS

Form A

In an attempt to improve our curriculum materials, Mountain-Plains is requesting your evaluation of those with which you have come in contact. To help us, please rate in the spaces below the curriculum material in your occupational area to the best of your ability and as honestly as possible. Check the blank that closest describes this material. Your answers will be treated confidentially.

---

Student Name_____ Test Site #_____ Date_____

Grade Level_____ Unit #_____ Other_____

---

Directions:

On the left-hand side of the page is a statement that may or may not be true of the material. Please mark the scale on the right side of the page with a check mark according to the following choices.

____ ____ ____ ____ ____ ____ (only check one column per item)

1 2 3 4 5 6

1. Means "This statement is almost always true about the curriculum material I have used."
2. Means "This statement is mostly true about the curriculum material I have used."
3. Means "This statement tends to be more true than false with regard to the curriculum material I have used."
4. Means "This statement is false slightly more than half the time with regard to the curriculum material I have used."
5. Means "This statement is often false with regard to the curriculum material I have used."
6. Means "This statement is almost always false with regard to the curriculum material I have used."

The phrase "learning materials" refers to the books, LAPs, films, slides and other instructional materials you use in your occupational area.

| | Almost Always True | Mostly True | More True Than Not | More False Than Not | Mostly False | Almost Always False |
|---|---|---|---|---|---|---|
| 1. The learning materials are clear and concise. | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. The learning materials are understandable. | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. The learning materials are able to get the subject matter across to me. | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. The learning materials are worthwhile. | 1 | 2 | 3 | 4 | 5 | 6 |
| 5. The learning materials are useful in helping me understand what I am supposed to be learning. | 1 | 2 | 3 | 4 | 5 | 6 |
| 6. The learning materials enable me to work on my own without a lot of assistance from the instructor. | 1 | 2 | 3 | 4 | 5 | 6 |
| 7. The learning materials are related to the doing activities. | 1 | 2 | 3 | 4 | 5 | 6 |
| 8. The learning materials are easy to understand. | 1 | 2 | 3 | 4 | 5 | 6 |
| 9. The learning materials cover all the subject matter. | 1 | 2 | 3 | 4 | 5 | 6 |
| 10. The learning materials are more helpful to me than those I used in public school. | 1 | 2 | 3 | 4 | 5 | 6 |
| 11. The learning materials are arranged in an order that makes sense. | 1 | 2 | 3 | 4 | 5 | 6 |

| | Almost Always True | Mostly True | More True Than Not | More False Than Not | Mostly False | Almost Always False |
|---|---|---|---|---|---|---|
| 12. The learning materials keep me interested in what I'm doing. | 1 | 2 | 3 | 4 | 5 | 6 |
| 13. The learning materials are necessary to what I am supposed to learn. | 1 | 2 | 3 | 4 | 5 | 6 |
| 14. The learning materials help make my studies more enjoyable. | 1 | 2 | 3 | 4 | 5 | 6 |
| 15. The learning materials are easy to work with. | 1 | 2 | 3 | 4 | 5 | 6 |
| 16. The learning materials are relied on more than the instructor. | 1 | 2 | 3 | 4 | 5 | 6 |
| 17. The learning materials are easy to progress through. | 1 | 2 | 3 | 4 | 5 | 6 |
| 18. The learning materials have real meaning for me. | 1 | 2 | 3 | 4 | 5 | 6 |
| 19. The learning materials are appropriate for my work. | 1 | 2 | 3 | 4 | 5 | 6 |
| 20. The learning materials tell me exactly what it is I need to know. | 1 | 2 | 3 | 4 | 5 | 6 |
| 21. The learning materials are easy for me to read. | 1 | 2 | 3 | 4 | 5 | 6 |
| 22. The learning materials do not contain words that are hard for me to understand. | 1 | 2 | 3 | 4 | 5 | 6 |

Additional Comments and Suggestions: _____

## Analysis of Data Collected for Evaluating Mountain-Plains Curriculum at Field Test Sites

All instruments used for data collection purposes will be subjected to an item analysis using standard procedures. A co-efficient alpha, an internal consistency reliability co-efficient, will be computed and reported for all instruments.

### Lap Tests

Lap tests will be analyzed against the criteria of an item difficulty level of P = .80. Any items that are significantly below this difficulty level will be revised or replaced before final publication of the curriculum. In addition, time in Lap data will be analyzed to establish parameters for each Lap. There will be two master listings. One will be by Lap and will contain descriptive statistics for total scores and time in Lap. The other listing will be by student and will contain descriptive statistics for his Lap test scores and reported time in Lap.

### Unit Tests

Besides standard item analysis procedures, unit tests will be analyzed to determine which items discriminate between mastery and non-mastery groups. The mastery group for any given unit will be those people who have obtained a minimum score of at least 4 out of 5 per Lap. A contingency table analysis will be performed based on comparing mastery level performance on the written test with scores on the performance test.

In addition to the previously mentioned analysis, unit tests will also be analyzed from the point of view of constructing a unifactor achievement test that will be scaled to obtain a true score for each individual. The true scores obtained using this method will then be correlated against performance tests graded as continuous rather than dichotomous variables.

### Course Tests

Course tests will be subjected to the same kinds of analyses described for unit tests with the exception of comparing them with performance test scores. Instead of this, pre and post levels of mastery will be computed for each student based on those items that discriminate on masters and non-masters as per the previously mentioned criteria. Pre/post differences will be computed based on true score theory to obtain an estimate of student gains in achievement.

Affective Instruments

All items used on affective instruments will be put through a Thurstone scaling procedure. In addition, co-efficient alpha will be computed and reported on all instruments. On instruments with a large number of items, the items will be grouped in such a way as to develop unifactor scales of maximal reliability.

Before making comparisons between groups based on these instruments, true scores will be computed for all subjects. These are the scores that will be used for making such comparisons.

# Part III

## Curriculum Orientation Package

MOUNTAIN-PLAINS CURRICULUM

ORIENTATION PACKAGE

Mountain-Plains Curriculum, in order to be effective, must be used in the procedural format designed specifically for it. These procedures are of the common-sense variety, and, with a minimum amount of orientation, are easy to use. So that you can have experience in their use, this orientation session is designed in such a way that the Mountain-Plains Procedures are used on a "walk through" basis. You will use a LAP, experience a pre and post test, and have your learning difficulties diagnosed, and treatment prescribed. When you validate this orientation session, it will be due to your ability to use Mountain-Plains Curriculum products and procedures. Your success is guaranteed because of your proven ability to perform, based on a post test. You may proceed at your own rate, and when completed, do your own thing until reconvened for a final briefing.

LEARNING ACTIVITY PACKAGE

PERFORMANCE ACTIVITY:

How to Use Mountain-Plains Curriculum Packages

OBJECTIVE:

Following this brief orientation session, instructors will be able to use Mountain-Plains Curriculum Packages in an actual teaching situation without supervision.

EVALUATION PROCEDURE:

It will be concluded that instructors will be able to comply with the provisions of the objective if they respond correctly to twelve out of fifteen items on the attached multiple choice cognitive test.

RESOURCES.

A Information Sheets

1. Research Procedure
2. Independent Student Progress Rationale
3 ABC's of the Testing Program
4. How to Use SPR's
5. Procedure for LAP/LEG Test Use and Disposition

B. Exhibits

1. LAP
2. SPR
3. Pretest
4. Post Test
5. LEG
6. GAP
7. Answer Key

PROCEDURE:

1 Take the pretest.
2 Diagnose your learning difficulties by indicating on the SPR those items you need not study.
3. Study the items indicated by your now modified SPR.
4. When you are finished studying the items on the Information Sheets as indicated by your SPR, take the post test.
5. If your score is 12 or better, you have validated out of this LAP.
6 You are finished. Please find another activity of interest to you until such time that we reconvene for the next session.

I Mountain-Plains Field Test Research Procedures

A. The primary purpose of field testing the Mountain-Plains Curriculum is to get third party professional and student reaction to what has proved to be successful with students and instructors at Mountain-Plains. Mountain-Plains Curriculum Department and Research Services Division seeks student and instructor opinions and suggestions regarding usefulness of the curriculum, its ease of teaching/learning, and its relative worth in terms of how well and how quickly students can learn using Mountain-Plains developed procedures.

B Field Test design and instrumentation have been developed by Mountain-Plains Personnel. Now, as a cooperative effort with a number of other schools and institutions, certain Mountain-Plains Curriculum Packages are being used and critiqued by persons removed from Mountain-Plain's subjective influence. Data will be retrieved by Mountain-Plains Staff, processed, and fed back into the system. Results will be made available to appropriate third-party contractors.

C. Three basic types of instruments are used to collect data. Each Learning Activity Package will have an immediate response sheet which students complete upon completing the LAP. This is used to elicit student responses before they become stale. Another type is the Teacher and Student Evaluation Sheets. This retrieves information of a broader nature and cross-checks the immediate LAP response for accuracy. The third type is the Monitoring Forms. This instrument detects improper use of Mountain-Plains Procedures and is an aid to Mountain-Plains Personnel in assisting teachers in making the best use of these procedures.

Other details of the design and purposes are to be found in the Curriculum Field Test Information Packet Part 1.

2. Independent Student Progress Rationale

Many educators and others now agree that it is advisable to allow students to progress at a rate commensurate with their ability and aspirational level. To do otherwise contributes to the destruction of an educational system even in a system which demands compulsory attendance. Mountain-Plains subscribes to this rationale, and is structured in such a way as to promote to the highest degree a climate wherein students can progress independently of one another, and where they compete, not with each other, but with themselves.

A. The Role of the Student

Students are advised of locations of learning materials and equipment, and are oriented to the mode of progression through the system which fosters independent study and allows students to work toward an objective regardless of the rate of progress of classmates.

B. The Role of the Teacher

Teachers are resource persons locating and directing students to information sources.

They serve in a guidance function.

They are curriculum managers.

C. What Teachers Are Not

They rarely lecture.

They are not clerks.

When the system is used as it was designed, students not only progress independently of their peers if they choose, but any student can enter any course at any time without dependence on other students or on the teacher. This is the open-entry, open-exit concept, and allows for a student to exit any course at the time he can demonstrate, through Mountain-Plains developed cognitive and/or performance tests, that he has attained the degree of proficiency mandated by the terminal performance objectives for the course.

3. The ABC's of the Testing Program

At Mountain-Plains no one can progress without demonstrating Performance. Performance determines the rate of progress from LAP to LAP, course to course, and provides the only basis for validation out of the program. This condition is expected to prevail at test sites also, although it is contrary to most public school policies where progression is time-anchored.

Three types of tests are provided by the Mountain-Plains Tests and Measurement Department. They are: Cognitive, Affective, and Performance tests. The Cognitive tests are without exception criterion-oriented, multiple choice. Their purpose is not to compare student with student, but to determine whether or not the student has met the criteria for performance with regard to what he is to have learned. Affective tests measure attitude change, and Performance tests determine whether or not a student can perform the job or tasks for which he has been trained. There are instances where only one of the three types is used. In other cases, two or all three are used.

As seen later, pretests determine what the student is to take and what he may prevalidate. LAP tests allow him to perform periodic self-checks on his own progress. Unit tests allow him to proceed to other material, and Course tests serve a similar function at the Course Level. All these tests contain the elements of diagnosis and prescription.

One can analyze each test item by item, can refer to the subject matter necessary to complete the item, and can also refer to an objective which governs both it and the subject matter. In this manner, students may readily see what it is that they need to study in order to validate a given course. Testing at Mountain-Plains is germane to individual progress.

4. How to Use Student Progress Records (SPR's)

At Mountain-Plains, Student Progress Records are used in a manner slightly different from that described here. They are also used in conjunction with another document called a Student Work Plan (SWP). This will not be used on your site. The reason for this distinction is that at Mountain-Plains we have a complete Career Guidance, Counseling, and Planning staff. These function in such a way that SWP's are necessary to route students in a manner consistent with daily demand changes. Not having that form of organization on your site, the SPR is the only such document necessary, and only in an abbreviated way. This is how it will be used:

Student Responsibility:

The SPR is designed so that students complete all the entries except the column which instructors initial to indicate that they are aware of and approve of the other entries in that line. The SPR, in fact, provides a kind of guide to students so they know where they are and where they are going at all times. The instructor is relieved of much clerical work because the student is responsible for accounting for his progress. When a LAP is prevalidated because of adequate pretest scores, the SPR reflects this. The LAP and its number are simply lined out and the columns to the right filled in. The student may keep the SPR in his possession or at some central location unless, for some reason the instructor needs the form. At the termination of the course or job title, the SPR is surrendered to the instructor for subsequent recording of data, and finally picked up by a Field Representative from Mountain-Plains for research processing.

5. Procedure for LAP, LEG and Test Usage

A. LEG's are Learning Experience Guides, and are to be used to describe courses or units as the case may be. By nature they are self-explanatory. They are useful for instructors, students, and others to gain a quick explanation of the contents of the corresponding curriculum package

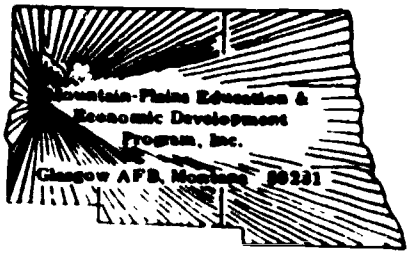
B. LAP's are Learning Activity Packages, and are designed to furnish the vehicle for student-learning material interface. Characteristically, they provide the objectives plus all the instructions and learning material reference the student needs to accomplish the objectives. By design, student interaction with instructors, learning materials, and equipment not alluded to within the LAP is supplementary to LAP content.

LAP's and LEG's are kept in a manner which provides easy access by students File cabinets, looseleaf notebooks, and pigeonhole cabinets work well depending on intended use and student population. This equipment is furnished by the contractor school. Of prime importance is that the student can retrieve his learning material without interaction with an instructor, and without delay.

C Cognitive tests are furnished, and with the exception of LAP tests, which are included in LAP's, are given either by the instructor or the Mountain-Plains Field Representative, and are kept separate from the rest of the curriculum packages. Course pre and post tests are given by the Field Representative on call from the contractor school. Unit tests are given by the instructor, and LAP tests are taken and processed by students. All tests, however, are kept stored in a safe place, and are sent to Mountain-Plains or picked up by the Field Representative.

Student: _____ File Code: _____

Date: _____ Date Published: _____




LAP PRETEST: MODEL FOR ORIENTATION

1. Mountain-Plains field test design has been developed in such a way as to:

   a. ensure that all third party contractors have access to all the data.
   b. ensure that the retrieved data will reflect favorably on the curriculum.
   c. maximize Mountain-Plains control over the data collection procedures.
   d. minimize "Mountain-Plains" subjective influence on the collected data.

2. The data obtained at the field testing site will be retrieved and analyzed by:

   a. the Montana State Department of Education research staff.
   b. a third party contractor.
   c. an "on-site" researcher in the employ of the institution.
   d. the Mountain-Plains staff.

3. Students are requested to fill out an "immediate response sheet" upon completion of a LAP because:

   a. it is important for students not to get behind on this kind of paper work if they expect to succeed with Mountain-Plains curriculum.
   b. it would be difficult for a student to remember his reaction to each LAP if he was asked to fill the response sheets out at the end of each unit.
   c. it is important to obtain immediate reactions while they are "fresh in the mind" of the student.
   d. students are not requested to fill out response sheets to LAPs; they do this only at the unit level.

4. Independent student progress is:

   a. important to Mountain-Plains curriculum design because it allows students to progress at a rate commensurate with their own abilities.
   b an important but not vital part of the Mountain-Plains curriculum design.
   c. an unessential side effect of the Mountain-Plains curriculum design.
   d. a concept that is still a matter of extreme controversy among professional educators.

5. When using Mountain-Plains curriculum, students are expected to:

   a. form small study groups and work on the LAPs together.
   b. work toward objectives independent of their classmates.
   c. obtain instructor approval to proceed at the end of each curriculum unit.
   d. evaluate themselves and make their own determination as to when they have completed a given course.

6. When using Mountain-Plains curriculum, student validation is accomplished by:

   a. cognitive and/or performance testing.
   b. performance testing only.
   c. cognitive testing only.
   d. student and instructor agreement as to student accomplishment.

7. Cognitive tests used with Mountain-Plains curriculum are:

   a. criterion referenced multiple-choice tests.
   b. normatively referenced multiple-choice tests.
   c. criterion referenced tests with multiple-item formats.
   d. normatively referenced tests with multiple-item formats.

8. When using Mountain-Plains curriculum, student validation occurs at:

   a. the LAP level.
   b. the unit level.
   c. the behavioral objective level.
   d. all curricular levels.

9. In most cases, student validation through the Mountain-Plains curriculum is accomplished by:

   a. cognitive tests.
   b. performance tests.
   c. affective tests.
   d. standardized achievement tests.

10. At the field testing site, the Student Progress Record:

   a. is used exactly the same way as at Mountain-Plains.
   b. is used differently than at Mountain-Plains.
   c. is used in conjunction with the Student Work Plan.
   d. is filled out by the instructor.

11. The Student Progress Record is maintained:

   a. at regular intervals.
   b. by the instructor.
   c. by the student.
   d. for research purposes in computing average amounts of time spent in each LAP.

12. The Student Progress Record is updated and kept in the possession of:

a. the student advisor.
b. the instructor.
c. the student.
d. the career guidance specialist or counselor.

13. In the Mountain-Plains curriculum, "Learning Experience Guides" provide:

a. the connecting link between curricular units.
b. directions on how to use a curriculum package.
c. a set of procedures and evaluational criteria for a curriculum package.
d. an explanation of the contents of a curriculum package.

14. LAP tests are:

a. used by the instructors in determining whether or ›t he initials the Student Progress Record.
b. administered and scored by the instructors.
c. thrown away after they are taken.
d. included with the LAPs as part of the learning materials for the LAP.

15. LAPs and LEGs should be stored in such a way as to:

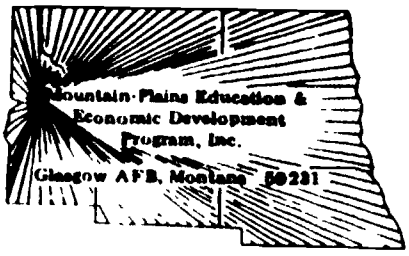
a. ensure instructor approval before a student progresses to the next LAP.
b. enable instructors to monitor student progress.
c. ensure that they are not lost or stolen.
d. enable students to use them without instructor interaction.

LAP PRETEST ANSWER KEY: MODEL FOR ORIENTATION

1. d
2. d
3. c
4. a
5. b
6. a
7. a
8. b
9. b
10. b
11. c
12. c
13. d
14. d
15. d

Student: _____ File Code: _____

Date: _____ Date Published: _____




LAP POST TEST: MODEL FOR ORIENTATION

1. The primary purpose of field testing Mountain-Plains curriculum is to:

   a. obtain unbiased opinions and reactions to it.
   b. obtain objective data that can be used to evaluate it.
   c. obtain the sample size needed to validate the curricular tests.
   d. enable Mountain-Plains to produce a salable curriculum product.

2. One basic type of instrument that will be used to collect data is:

   a. a standardized achievement test.
   b. the structured interview.
   c. a forced-choice attitude scale.
   d a free-response interview.

3. Students are requested to fill out an "immediate response sheet" upon completion of a LAP because:

   a. it is important for students not to get behind on this kind of paper work if they expect to succeed with Mountain-Plains curriculum.
   b. it would be difficult for a student to remember his reaction to each LAP if he was asked to fill the response sheets out at the end of each unit.
   c. it is important to obtain immediate reactions while they are "fresh in the mind" of the student.
   d. students are not requested to fill out response sheets to LAPs, they do this only at the unit level.

4. When using Mountain-Plains curriculum, the primary function of the teacher can best be described by the role of:

   a curriculum manager.
   b. lecturer.
   c. clerk.
   d. equipment and material manager.

5. When using Mountain-Plains curriculum:

   a. no formal evaluation of student progress is made before students leave a course of study.
   b. all students must begin a given course of study at the same time, but can finish independently of each other.
   c. students may begin independently of each other, but must be evaluated together at the end of each course of study.
   d. students may enter and leave on an "open entry/open exit" basis.

6. When using Mountain-Plains curriculum, student validation is accomplished by:

   a. cognitive and/or performance testing.
   b. performance testing only.
   c. cognitive testing only.
   d. student and instructor agreement as to student accomplishment.

7. Pretests in the Mountain-Plains curriculum are used to:

   a. provide instructors with a means for estimating student completion times for each course of study.
   b. obtain estimates of prior knowledge for research purposes.
   c. help instructors locate seriously deficient students who need extra help with the subject matter.
   d. determine those LAPs a student must take as opposed to those he already knows.

8. In most cases, student validation through the Mountain-Plains curriculum is accomplished by:

   a. cognitive tests.
   b. performance tests.
   c. affective tests.
   d. standardized achievement tests.

9. In the Mountain-Plains curriculum, LAP tests are used for:

   a. research purposes only.
   b. student validation.
   c. student self-checks on his own progress.
   d. instructor checks on student progress.

10. The Student Progress Record is maintained:

    a. at regular intervals.
    b. by the instructor.
    c. by the student.
    d. for research purposes in computing average amounts of time spent in each LAP.

11 The Student Progress Record contains:

    a. rating scales for assessing student abilities and aptitudes with regard to the course of study it pertains to.
    b. time in LAP information so a student can tell whether or not he is mastering the material in an appropriate amount of time.
    c. all the information a student needs to complete his course of study.
    d. a place where the student can evaluate each LAP as he completes it.

12. A major side beneift of the Student Progress Record is:

    a. the students are able to progress at a faster rate of speed than they could without it.
    b. the instructor has more time to devote to lecturing students.
    c. the instructor is relieved of a great deal of clerical work.
    d. it enables student progress to be compared to an absolute standard or criterion level.

13 Learning Activity Packages are curricular materials that:

    a. are complete within themselves in the sense that they contain all the information necessary to complete a behavioral objective without referring to other reference materials.
    b. provide directions to the student so that he may accomplish the units that are part of each LAP.
    c. are used by students in order for them to accomplish the individual goals they specify for themselves in the Student Progress Record.
    d. provide instructions and references that enable a student to accomplish a specific behavioral objective.

14. The tests administered and scored by the instructor are:

    a. pre and post course level tests.
    b pre and post unit level tests.
    c lap tests.
    d all tests are instructor administered and scored

15. LAPs and LEGs should be stored in such a way as to:

    a. ensure instructor approval before a student progresses to the next LAP.
    b. enable instructors to monitor student progress.
    c. ensure that they are not lost or stolen.
    d. enable students to use them without instructor interaction.

LAP POST TEST ANSWER KEY: MODEL FOR ORIENTATION

1. a
2. b
3. c
4. a
5. d
6. a
7. d
8. b
9. c
10. c
11. c
12. c
13. d
14. b
15. d

Now let's look at the progress of a fictional student through the steps in negotiating a course. The following is a typical sequence from a Mountain-Plains course. In addition to the elements just presented, this expositionary model includes an SPR and examples of other tests. The examples referred to are found on pages 48 through 71.

Smith is a hypothetical student in an Auto Mechanics class. He takes the course test to determine what Learning Activity Packages he does or does not need to take. In Smith's case his scores indicate that he has prevalidated LAP .06 of Unit .03, Transmission Assembly, but he must take the rest of the course. The person administering the course pretest will enter a V (for validation) after LAP .06 on the Student Progress Record. This indicates that he need not complete that LAP. (See pages 48, 49)

Smith now reads the course Learning Experience Guide to get an overview of the course. He then reads the Unit Learning Experience Guide for the first Unit. (In our example, Unit .03.)

He may or may not take a unit pretest (pages 56-58 ). The unit pretest is for those students who are confident they can prevalidate a unit and who specifically request it.

Smith proceeds through the LAP's of Unit .03 (page 59) (LAP .05 in our example), following the instructions on the LAP and when ready, takes the corresponding LAP test (page 61). Notice that he takes the test at his own discretion and proceeds to the next LAP when he is satisfied that he is competent to do so. When he has completed any LAP's not prevalidated, he requests to take the unit test.

If the unit has both a cognitive and a performance test (some do not have a performance test), Smith is given the cognitive test first, then the performance test. However, the performance test is scored first. If Smith passes the performance test, the score on the cognitive test has no value; he has validated the unit by performance. If he fails the performance test, however, the instructor should then score the written test, diagnose the student's weaknesses and determine which LAP's the student needs to retake. When Smith has retaken the necessary LAP's, he again attempts the performance test.

The mechanical details of getting Smith through the process are simple, but there are some important rules the instructor needs to observe in order to make the system work. By way of brief review:

1 Keep in mind that the role of the instructor is that of guidance and resource person, not a lecturer and a clerk. Students review their own materials, seek accessible resources and proceed independently. If the instructor finds himself shuffling papers and answering questions which are easily answered in resource material, he may not long appreciate the system. He should be encouraging, reinforcing, guiding and supporting students, while giving them supplemental instructions not otherwise available.

2. Students should proceed from LAP to LAP without assistance. Unit testing indicates to the instructor how well they are proceeding.

3. The Student Progress Record should be filled out by the student, initialed by the instructor, and kept in a place accessible to both.

4. All tests except LAP tests should be kept separate from LAP's, LEG's, etc., yet accessible to students. Only instructors should have access to scoring keys in unit tests.

5. LAP's should be filed numerically, and be readily accessible to students.

6. LAP's, LEG's and tests are expendable only to the extent that they deteriorate through use, and should be used until their appearance dictates replacement.

7. Test answer sheets are expendable and should be replaced after each time used.

8. Test answer sheets should be kept secure by the instructor until picked up by the Mountain-Plains representative.

9. Field Test instruments should be kept separate from all others until picked up by Mountain-Plains representatives.

*Congratulations on successfully validating your orientation session.* You have just "walked through" a typical Mountain-Plains Curriculum product. You have experienced the process of learning through which you will guide your students. Your performance on the post tests indicate that you understand the principles of Mountain-Plains independent student progress rationale, and the purpose of criterion referenced testing as used at Mountain-Plains.

# STUDENT PROGRESS RECORD



Name _____ Number _____ Entry Date _____

Curriculum Area 37 AUTOMOTIVE Pretest Date _____

JOB TITLE: Transmission Mechanic Post Test Date _____

| | | Time Spent in Curric Compon. | Date Started | Date Com-pleted | Instruc tor's Initials | | |
|---|---|---|---|---|---|---|---|
| .01 | Automotive Shop Safety | | | | | | |
| | Pretest Score Post Test Score | | | | | | |
| .01 | Shop Safety | | | | | | |
| | Pretest Post Test Perf. Test | | | | | | |
| .01 | Fundamentals of Shop Safety | | | | | | |
| .02 | Safety with Tools | | | | | | |
| .03 | First Aid | | | | | | |
| .04 | Shop Safety Observation | | | | | | |
| | | | | | | | |
| .02 | Tools and Equipment | | | | | | |
| | Pretest Score Post Test Score | | | | | | |
| .01 | Basic Tools | | | | | | |
| | Pretest Post Test Perf. Test | | | | | | |
| .01 | Hand Tool Fundamentals | | | | | | |
| .02 | Hand Tool Practice | | | | | | |
| | | | | | | | |
| 02 | Special Tools | | | | | | |
| | Pretest Post Test Perf. Test | | | | | | |
| .01 | Precision Measuring Tools Fundamentals | | | | | | |
| .02 | Precision Measuring Tools Practice | | | | | | |
| .03 | Fasteners and Torque Wrench | | | | | | |
| | | | | | | | |
| 03 | Shop Equipment | | | | | | |
| | Pretest Post Test Perf. Test | | | | | | |
| .01 | Shop Equipment Fundamentals | | | | | | |
| .02 | Jacks and Lifts Practice | | | | | | |
| .03 | Presses and Pullers Practice | | | | | | |
| .04 | Toolroom Observation | | | | | | |
| | | | | | | | |
| 10 | Transmissions | | | | | | |
| | Pretest Score Post Test Score | | | | | | |
| .01 | Clutches | | | | | | |
| | Pretest Post Test Perf. Test | | | | | | |
| .01 | Fundamentals of Clutch | | | | | | |
| .02 | Pressure Plate | | | | | | |
| .03 | Clutch Removal and Replace | | | | | | |
| .04 | Replace Clutch Pilot Bushing | | | | | | |
| .05 | Replace Throw-Out Bearing | | | | | | |
| .06 | Adjusting Clutch Linkage | | | | | | |
| .07 | Self-Adjusting Clutch | | | | | | |
| .08 | Trouble Shooting Clutches | | | | | | |
| | | | | | | | |

# STUDENT PROGRESS RECORD

Name _____ Number _____

Curriculum Area 37 AUTOMOTIVE

JOB TITLE. Transmission Mechanic

Entry Date _____

Pretest Date _____

Post Test Date _____

| | | Time Spent in Curric. Compon. | Date Started | Date Completed | Instructor's Initials | | |
|---|---|---|---|---|---|---|---|
| .02 | Fundamentals of Standard Transmissions | | | | | | |
| | Pretest Post Test Perf. Test | | | | | | |
| .01 | Fundamentals of 3 Speed Standard | | | | | | |
| .02 | Fundamentals of 4 Speed Standard | | | | | | |
| .03 | Fundamenuals of Overdrive | | | | | | |
| | | | | | | | |
| .03 | Standard Transmission | | | | | | |
| | Pretest Post Test Perf. Test | | | | | | |
| .01 | Transmission Removal | | | | | | |
| .02 | Transmission Disassembly | | | | | | |
| .03 | Gears and Shafts | | | | | | |
| .04 | Synchronizers | | | | | | |
| .05 | Bearings and Seals | | | | | | |
| .06 | Transmission Assembly | | | | | | |
| .07 | Shift Forks and Linkage | | | | | | |
| .08 | Trouble-Shooting Standard Transmission | | | | | | |
| | | | | | | | |
| .04 | Fundamentals of Automatic Transmissions | | | | | | |
| | Pretest Post Test Perf. Test | | | | | | |
| .01 | Fluid Couplings | | | | | | |
| .02 | Planetary Gears | | | | | | |
| .03 | Pumps and Valves | | | | | | |
| .04 | Modulator | | | | | | |
| .05 | Special Tools | | | | | | |
| .06 | Leaks and Fluid | | | | | | |
| .07 | Towing Car Equipped with Automatic Transmission | | | | | | |
| | | | | | | | |
| .05 | Two-Speed Automatic | | | | | | |
| | Pretest Post Test Perf. Test | | | | | | |
| .01 | Diagnosis and Pressure Checks | | | | | | |
| .02 | Transmission Removal | | | | | | |
| .03 | Transmission Disassembly | | | | | | |
| .04 | Convertor and Stator | | | | | | |
| .05 | Clutch | | | | | | |
| .06 | Servo | | | | | | |
| .07 | Bypass Valve | | | | | | |
| .08 | Pumps | | | | | | |
| .09 | Valve Body | | | | | | |
| .10 | Governor | | | | | | |
| .11 | Servo Pistons | | | | | | |
| .12 | Planetary Unit | | | | | | |
| .13 | Transmission Reassembly | | | | | | |

73 When assembling a synchronizer, you should lubricate with.

a light 10 weight oil.
b. graphite.
c. transmission lube.
d. light weight grease.

74. The hub has slats in it where what goes?

a. Blocking ring.
b. Sleeve.
c. Inserts.
d. Snap ring.

75. How many inserts does a synchronizer hub have?

a 3.
b 2.
c. 1.
d. 4.

37.10.03.05

76. When putting a front seal on a transmission, you have it facing:

a. with lip facing the right of the housing.
b. with lip out
c. with lip in.
d with lip facing the left of the housing.

77 To remove a rear oil seal, you can do so by:

a. removing the throw out bearing
b taking the transmission out.
c removing the pressure plate.
d removing the drive shaft.

78. It is possible to secure any degree of torque multiplication by:

a. a heavier clutch.
b. a larger engine.
c. a larger torque amplifier.
d. a set of various gears.

79. A rear seal can be removed·

a. by heat, by expanding it.
b. with a slide hammer.
c by shrinking it by using dry ice.
d. by pressing it off.

80. When overhauling a direct clutch and piston assembly, what do you do with the old seal?

a. Discard them.
b. Clean in gasoline.
c. Clean in carburetor cleaner.
d. Clean with clean rag.

37.10.03.06

81. When pins pass through outer wall of the case, what should you do to prevent them from slipping out?

a. Lead hole in.
b. Glue pin to hole.
c. Lubricate them.
d. Stake them.

82. When the countershaft is in place, you should check end play with a:

a. depth gauge.
b. oscilloscope.
c. micrometer.
d. feeler gauge.

83. When installing a new part in a transmission, it is important to try it in the transmission to be sure it:

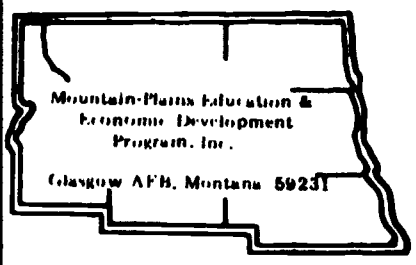
a has excessive clearance for heat expansion.
b has excessive play.
c fits properly.
d. wobbles on the shaft.

84 New thrust washers, when assembling a transmission, will provide.

a. tight fit with no end play.
b. proper end play.
c. and act as an oil seal.
d. a backing mechanism for the shaft.

File Code: 37.10.00.00.A2-1

Date Published: 9-18-74




# Learning Experience Guide

COURSE: TRANSMISSION

## DESCRIPTION:

Transmissions covers the theory, diagnoses and overhaul of manual and automatic transmissions, drivelines and differentials.

## RATIONALE:

The theory and techniques covered in this course will enable a person to diagnose and repair manual and automatic transmissions, drivelines and differentials.

## PREREQUISITES:

Math Skills - level as determined by the specific requirement of the particular job title.
Communication - level as determined by the specific requirement of the particular job title.

## OBJECTIVE:

Recognize the theory and procedure of diagnosis; perform tests and repairs on transmissions, drivelines, and differentials.

## RESOURCES:

Auto Service and Repair, Stockel, Goodhart-Wilcox, Inc., 1969.
Auto Mechanics Fundamentals, Stockel, Goodhart-Wilcox, Inc., 1969.
Service Manuals

## GENERAL INSTRUCTIONS:

Complete course pretest.
Complete all of the required units.
Complete course post test.

**Principal Author(s):** C. Schramm/W. Osland

PERFORMANCE ACTIVITIES:

.01 Clutches
.02 Fundamentals of Standard Transmission
.03 Standard Transmission
.04 Fundamentals of Automatic Transmissions
.05 Two-Speed Automatic
.06 Three-Speed Automatic
.07 Drive Shafts
.08 Differentials

EVALUATION PROCEDURE:

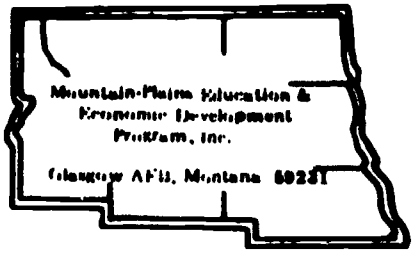
80% accuracy required on all LAP study work, 80% accuracy on course post test and 80% accuracy on unit performance tests.

FOLLOW-THROUGH:

Discuss with the instructor the next course to complete.

File Code: 37.10.03.00.A2-1

Date Published: 9-18-74




# Learning Experience Guide

UNIT: STANDARD TRANSMISSION

RATIONALE:

The technique and procedures in this unit enable one to diagnose and overhaul standard transmissions.

PREREQUISITES:

None

OBJECTIVE:

Demonstrate the proper procedure for troubleshooting and overhaul of the standard transmission.

RESOURCES:

Auto Mechanics Fundamentals, Stockel, Goodhart-Wilcox, Inc., 1969.
Auto Service and Repair, Stockel, Goodhart-Wilcox, Inc., 1969.

GENERAL INSTRUCTIONS:

Complete the unit pretest.
Complete all of the performance activities in this unit.
Complete the unit performance test.
Complete the unit post test.

PERFORMANCE ACTIVITIES:

01 Transmission Removal
.02 Transmission Disassembly
.03 Gears and Shafts
.04 Synchronizers
.05 Bearings and Seals
.06 Transmission Assembly
.07 Shift Forks and Linkage
.08 Troubleshooting

**Principal Author(s):** C. Schramm/W. Osland

EVALUATION PROCEDURE:

80% accuracy on performance test and 80% correct on unit post test.

FOLLOW-THROUGH:

Discuss with the instructor the next unit to complete.

18. Which of the following must be reassembled in the same manner as it was taken apart?

    a. Inserts.
    b. Third-speed gear.
    c. Sleeve.
    d. Spring inserts.

19. When assembling a synchronizer, you should lubricate with:

    a. light 10 weight oil.
    b. transmission lube.
    c. light weight grease.
    d. graphite.

20. In order to insure that the bl cking rings are put on the hub the same way they were taken off, you should:

    a. scribe them.
    b. draw a picture of them.
    c. count the gear teeth on each side.
    d. write on them to tell which side is which.

37.10.03.05

21. A rear seal can be removed·

    a. by shrinking it using dry ice.
    b. with a slide hammer.
    c. by pressing it off.
    d. with heat, by expanding it.

22. When putting a front seal on a transmission, you have it facing.

    a. with lip facing the right of the housing.
    b. with lip in.
    c. with lip out.
    d. with lip facing the left of the housing.

23. When replacing an input shaft bearing, you need to

    a. be sure it is completely dry.
    b. put sealer on it.
    c. lubricate it.
    d. be sure it is rippled on the surface.

24. You can replace a front oil seal by:

    a. removing bell housing.
    b. removing throw-out bearing.
    c. removing clutch.
    d. removing transmission.

25. It is possible to secure any degree of torque multiplication by:

    a. a set of various gears.
    b. a heavier clutch.
    c. a larger engine.
    d. a larger torque amplifier.

37.10.03.06

26. When the countershaft is in place, you should check end play with a(n):

    a. oscilloscope.
    b. feeler gauge.
    c. depth gauge.
    d. micrometer.

27. If drive-in expander plugs were removed:

    a. install new ones.
    b. lubricate well and install.
    c. install again but do not use a sealer.
    d. dry thoroughly and install.

28. When pins pass through the outer wall of the case, what should you do to prevent them from slipping out?

    a. Lubricate them.
    b. Stake them.
    c. Lead hole in.
    d. Glue pin to hole.

29. Before installation of a standard transmission every part should be

    a. sanded or emery-clothed.
    b. heavily lubricated.
    c. greased throughly.
    d. dried completely.

## UNIT TEST ANSWER SHEET

Occupational Area:
File Code: 37.10.03.00.A2-2
Name:

### ANSWERS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 37.10.03.01 | 1. B | _____ | 37.10.03.05 | 21. B | _____ | 41. | _____ |
| | 2. B | _____ | | 22. B | _____ | 42. | _____ |
| | 3. A | _____ | | 23. C | _____ | 43. | _____ |
| | 4. C | _____ | | 24. D | _____ | 44. | _____ |
| | 5. C | _____ | | 25. A | _____ | 45. | _____ |
| 37.10.03.02 | 6. B | _____ | 37.10.03.06 | 26. B | _____ | 46. | _____ |
| | 7. C | _____ | | 27. A | _____ | 47. | _____ |
| | 8. A | _____ | | 28. B | _____ | 48. | _____ |
| | 9. C | _____ | | 29. B | _____ | 49. | _____ |
| | 10. C | _____ | | 30. A | _____ | 50. | _____ |
| 37.10.03.03 | 11. A | _____ | 37.10.03.07 | 31. A | _____ | 51. | _____ |
| | 12. B | _____ | | 32. D | _____ | 52. | _____ |
| | 13. A | _____ | | 33. C | _____ | 53. | _____ |
| | 14. B | _____ | | 34. D | _____ | 54. | _____ |
| | 15. D | _____ | | 35. D | _____ | 55. | _____ |
| 37.10.03.04 | 16. A | _____ | 37.10.03.08 | 36. A | _____ | 56. | _____ |
| | 17. A | _____ | | 37. C | _____ | 57. | _____ |
| | 18. C | _____ | | 38. A | _____ | 58. | _____ |
| | 19. B | _____ | | 39. D | _____ | 59. | _____ |
| | 20. A | _____ | | 40. A | _____ | 60. | _____ |

File Code: 37.10.03.05.A2-0

Date Published: 9-18-74

Mountain-Plains Education & Economic Development Program, Inc
Glasgow AFB, Montana 59231

# Learning Activity Package

Student: _____

Date: _____

**PERFORMANCE ACTIVITY:** Bearings and Seals

OBJECTIVE:

Recognize and follow the proper procedure to replace the bearings and seals in an automobile automatic transmission.

EVALUATION PROCEDURE:

80% accuracy on LAP test.

RESOURCES:

Hand Tools
Puller
Repair Manual
Snap-Ring Pliers
Standard Transmission
Work Order Form

PROCEDURE:

1. With the disassembled transmission on the work bench, write on the work order all bearings and seals that need replacing.
   NOTE: If a seal is leaking, is hard or cracked, it needs replacement. Check bearings and race for play, chips and wear marks. Check the manual for bearing tolerances.
2. Obtain the correct repair manual for the transmission to be worked on.
3. Following the procedure outlined in the manual, replace the bearings and seals that are listed on the work order.
4. Ask the instructor to evaluate your work.
5. Take the LAP test.
6. Return manual and tools to their proper places and proceed to next LAP.

**Principal Author(s):** C. Schramm/W. Osland

File Code: 37.10.03.06.A2-0

Date Published: 9-18-74

Mountain Plains Education & Economic Development Program, Inc
Glasgow AFB Montana 59231

# Learning Activity Package

Student: _____

Date: _____

**PERFORMANCE ACTIVITY:** Transmission Assembly

OBJECTIVE:

Recognize and follow the proper procedure to assemble a standard transmission.

EVALUATION PROCEDURE:

80% accuracy on LAP test.

RESOURCES:

Grease
Hand Tools
Repair Manual
Snap-Ring Pliers
Standard Transmission
Sealant
Transmission Oil

PROCEDURE:

1. Check to see that all parts are clean.
2. Obtain a copy of the repair manual for the year and model number of the particular transmission to be assembled.
3. Assemble the transmission following the procedure outlined in the repair manual.
   NOTE: Heavily lubricate all parts with transmission oil before assembling. Use new snap-rings whenever possible. Use new gaskets and sealant to prevent leaks. Use grease to hold needle bearings in place during assembly.
4. Ask the instructor to evaluate your work.
5. Return manual, tools, and equipment to their proper places.
6. Take the LAP test.
7. Proceed to the next LAP.

**Principal Author(s):** C. Schramm/W. Osland

Student: _____ File Code: 37.10.03.05 & .06.A2-2

Date: _____ Date Published: 9-9-74

Mountain Plains Education & Economic Development Program, Inc.
Glasgow AFB, Montana 59231

# LAP TEST: BEARINGS AND SEALS/TRANSMISSION ASSEMBLY

37.10.03.05

1. It is possible to secure any degree of torque multiplication by:

   a. a larger engine.
   b. a heavier clutch.
   c. a set of various gears.
   d. a larger torque amplifier.

2. When installing a new inner clutch piston seal on a piston, it will have to face:

   a. toward spring pockets.
   b. toward forward clutch piston.
   c. away from center support assembly.
   d. away from spring pockets.

3 A rear transmission seal can be removed:

   a. by shrinking it using dry ice.
   b. by pressing it off.
   c with a slide hammer.
   d. by heat, by expanding it.

4. When overhauling a direct clutch and piston assembly, what do you do with the old seals?

   a. discard them
   b. clean with a clean rag
   c. clean in gasoline
   d. clean in carburetor cleaner

5 In order to replace a front oil seal in a standard transmission you must remove the:

   a. transmission.
   b. clutch.
   c. throw-out bearing.
   d. bell housing.

37.10.03.06

6. Before installation of a transmission assembly, every part should be:

   a. greased thoroughly.
   b. dried completely.
   c. sanded or emery clothed.
   d. heavily lubricated.

7. When using needle bearings on the reverse idler gear shaft to install bearings, you:

   a. use a heavy grease to keep them in place.
   b. use a dummy shaft.
   c. use thrust washers on each side of bearings.
   d. use a tweezers.

8. When pins pass through the outer wall of the case, what should you do to prevent them from slipping out?

   a. lead hole in
   b. stake them
   c. lubricate them
   d. glue pin to hole

9. When installing a new part in a transmission, it is important to try it in the transmission to be sure it:

   a. has excessive play.
   b. has excessive clearance for heat expansion.
   c. wobbles on the shaft.
   d. fits properly.

10. New thrust washers, when assembling a transmission, will provide:

   a. proper end play.
   b. and act as an oil seal.
   c. tight fit with no end play.
   d. a backing mechanism for the shaft.

# LAP TEST ANSWER KEY: BEARINGS AND SEALS/TRANSMISSION ASSEMBLY

## LAP 05

1. c
2. d
3. c
4. a
5. a

## LAP 06

6. d
7. b
8. b
9. d
10. a

37.10.03.04 (continued)

18. When assembling a synchronizer, you should lubricate with:

    a. transmission lube.
    b. graphite.
    c. light 10 weight oil.
    d. light weight grease.

19. The hub has slats in it so _____ can be fitted into it.

    a blocking ring
    b. sleeve
    c. inserts
    d. snap ring

20. How many inserts does a synchronizer hub have?

    a. 2
    b. 3
    c. 1
    d. 4

37.10.03.05

21. When replacing an input shaft bearing, you need to:

    a. put sealer on it.
    b lubricate it.
    c. be sure it is completely dry.
    d. be sure it is rippled on the surface.

22. It is possible to secure any degree of torque multiplication by.

    a. a heavier clutch.
    b. a larger torque amplifier.
    c. a larger engine.
    d. a set of various gears.

23. You can replace a front oil seal by:

    a. removing throw-out bearing.
    b. removing clutch.
    c. removing transmission.
    d. removing bell housing.

37.10.03.05 (continued)

24. When putting a front seal on a transmission, you have it facing:

a. with lip facing the left of the housing.
b. with lip out.
c. with lip facing the right of the housing.
d. with lip in.

25. To remove a rear oil seal, you can do so by:

a. taking the transmission out.
b. removing the drive shaft.
c. removing the pressure plate.
d. removing the throw-out bearing.

37.10.03.06

26. New thrust washers, when assembling a transmission, will provide:

a. and act as an oil seal.
b. tight fit with no end play.
c. proper end play.
d a backing mechanism for the shaft.

27. If drive-in expander plugs were removed:

a. lubricate well and install.
b. install new ones.
c. dry thoroughly and install.
d. install again but do not use a sealer.

28. When pins pass through the outer wall of the case, what should you do to prevent them from slipping out?

a. glue pin to hole
b. lubricate them
c. lead hole in
d. stake them

29. When using needle bearings on the reverse idler gear shaft to install bearings, you.

a. use a dummy shaft.
b. use a tweezers.
c. use a heavy grease to keep them in place.
d. use thrust washers on each side of bearings.

## UNIT TEST ANSWER SHEET

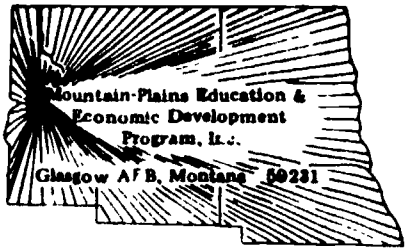
Occupational Area:
File Code: 37.10.03.00.B2-2
Name:

### ANSWERS

| | | | | | | |
|---|---|---|---|---|---|---|
| 37.10.03.01 | 1. A | | 37.10.03.05 | 21. B | | 41. |
| | 2. D | | | 22. D | | 42. |
| | 3. C | | | 23. C | | 43. |
| | 4. A | | | 24. D | | 44. |
| | 5. C | | | 25. B | | 45. |
| 37.10.03.02 | 6. A | | 37.10.03.06 | 26. C | | 46. |
| | 7. D | | | 27. B | | 47. |
| | 8. B | | | 28. D | | 48. |
| | 9. A | | | 29. A | | 49. |
| | 10. B | | | 30. C | | 50. |
| 37.10.03.03 | 11. D | | 37.10.03.07 | 31. A | | 51. |
| | 12. C | | | 32. A | | 52. |
| | 13. D | | | 33. B | | 53. |
| | 14. D | | | 34. A | | 54. |
| | 15. A | | | 35. D | | 55. |
| 37.10.03.04 | 16. C | | 37.10.08.08 | 36. D | | 56. |
| | 17. C | | | 37. A | | 57. |
| | 18. A | | | 38. B | | 58. |
| | 19. C | | | 39. B | | 59. |
| | 20. B | | | 40. C | | 60. |

Student: _____ File Code: 37.10.03.00.A1-5

Date: _____ Date Published: 11/18/74




Family Pay Number: _____ Sex: M F (Circle 1)

UNIT PERFORMANCE TEST: STANDARD TRANSMISSION

OBJECTIVE 1:

Troubleshoot transmission as per checklist.

OBJECTIVE 2:

Remove and disassemble transmission.

OBJECTIVE 3:

Repair transmission as per checklist.

OBJECTIVE 4:

Reassemble transmission as per checklist.

TASK:

The student will be assigned a car with a standard transmission with which he must troubleshoot, remove, disassemble, inspect, repair, and reassemble the transmission.

ASSIGNMENT:

CONDITIONS:

The student may use only those materials and tools provided for the test and will take the test in an auto shop.

RESOURCES:

Auto with standard transmission
Jacks
Jack stands
Service and parts manuals
New parts as needed
Transmission lubricant
Combination Ignition wrench set
Combination Wrench Set
Standard Screwdriver Set
Phillips Screwdriver Set
Feeler gauge - .002 through .025 inch
Hex Key Set
Diagonal Cutting Pliers
Needle Nose Plier
1/4" Drive Socket Set
Ratchet - 3" and 6" extensions - 6" flex handle
Ball Peen hammer
Plastic Tip Hammer
Screw Starter
Chisel and Punch Set
5/32" Pin Punch - 3/16" Solid
Gasket scraper
3/8" Drive Ratchet
3" Extension
Spark Plug Socket
6" Extension
Speed Handle
3/8" Drive Socket Set

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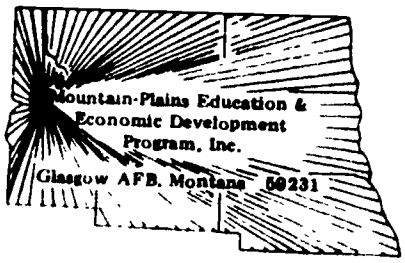


Family Pay Number: _____ Sex: M F (Circle 1)

PERFORMANCE CHECKLIST:

OVERALL PERFORMANCE: Satisfactory_____ Unsatisfactory_____

| | CRITERION Met | Not Met |
|---|---|---|
| Objective 1: | | |
| 1. Checks clutch for trouble. | | |
| Criterion: Follows service manual procedures for troubleshooting a clutch. | | |
| 2. Check transmission for hard shifting. | | |
| Criterion: Compares to manufacturer's specifications. | | |
| 3. Check transmission for clash in shifting. | | |
| Criterion: Compares to manufacturer's specifications. | | |
| 4. Check transmission for noise in forward speed. | | |
| Criterion: Compares to Manufacturer's specifications. | | |
| 5. Check tranmission for noise in reverse. | | |
| Criterion: Compares to manufacturer's specifications. | | |
| 6. Check transmission for slipping out of gear. | | |
| Criterion: Compares to manufacturer's specifications. | | |
| 7. Check tranmission for noise in neutral. | | |

| | CRITERION Met | Not Met |
|---|---|---|
| Criterion: Compares to manufacturer's specifications. | | |
| Objective 2: | | |
| 8. Removes transmission safely. | | |
| Criterion: Uses safety devices and does not damage transmission. | | |
| 9. Disassembles transmission. | | |
| Criterion: Follows service manual procedures and cleans all parts. | | |
| Objective 3: | | |
| 10. Repairs transmission. | | |
| Criterion: Compares all parts to manufacturer's specifications. Replaces defective parts. | | |
| Objective 4: | | |
| 11. Assembles transmission. | | |
| Criterion: Follows service manual procedure. | | |
| 12. Installs transmission. | | |
| Criterion: Transmission and drive line correctly assembled and lubricated. | | |
| 13. Installs and adjusts shift linkage. | | |
| Criterion: Transmission shifts and operates to manufacturer's specifications. | | |

| | CRITERION | |
|---|---|---|
| | Met | Not Met |
| 14. Completes job in allotted time. | | |
| Criterion: Meets flat rate time on assigned vehicle. | | |
| | | |
| The student must successfully complete 12 out of 14 line items to achieve a passing score. | | |

You have also demonstrated your ability to cope with LAP's, LEG's, and GAP's, pre and post tests, and SPR's. Therefore, you may look forward to enjoying your role as a Mountain-Plains Curriculum Manager and Resource Person. The Mountain-Plains Curriculum Department will be assured of a field test bed which will be a valid indication of the extent to which Mountain-Plains products are useful to students and teachers.

# Part IV

# Contractual Arrangements

Mountain-Plains Education & Economic Development Program, Inc.

POST OFFICE BOX 3078 • GLASGOW AFB, MONTANA 59231 • TEL: (406) 524-6221

## CONTRACTUAL ARRANGEMENTS

In order to ensure that both parties to Mountain-Plains Field Testing Efforts, fully understand their responsibilities and benefits, this agreement has been prepared, and if considered reasonable by the contractor school, will be considered as binding by Mountain-Plains.

As there will be a variety of test sites some terms may not fully fit these various situation. Consequently, it is deemed desirable for write-in contingencies to be added where appropriate and for modifications to occur elsewhere as mutually agreeable.

The agreement is arranged in four parts: Mountain-Plains responsibilities and benefits, contractor school responsibilities and benefits.

### I. MOUNTAIN-PLAINS

A. Responsibilities:

1. To furnish all necessary curriculum packages in sufficient quantity. This includes LAPs, LEGs, and Test Materials.
2. To furnish information packages including procedural explanations, field test instruments and reporting/reaction forms.
3. To furnish an orientation package detailing the contents of Mountain-Plains Curriculum Packages and their methods of use.
4. To furnish sufficient consultation to ensure teacher and student understanding of their roles in use of Mountain-Plains Curriculum.
5. To furnish teaching materials for use with Mountain-Plains Curriculum. The type and extent of these materials will differ from site to site. An attachment will list items appropriate to each site.
6. Mountain-Plains Field Representatives are obliged to conduct routine consultations and visitations in a manner deemed least disrupting to ongoing classes and least disturbing to instructors.
7. When all data has been collected and processed, and when findings are published the contractor is to be presented with an appropriate number of copies of such findings.

B. Benefits:

1. Mountain-Plains is entitled to use contractor's name, description in varying detail, and results of field testing in professional publications.

### II. CONTRACTOR

A. Responsibilities:

1. To furnish facilities adequate to the proper conduct of classes and appropriate to one Curriculum Package being used.
2. To furnish equipment necessary for fulfilling requirements imposed by the Mountain-Plains Curriculum Package being used.
3. To conform to such provisions as contained in instructors and students, e.g., administration of tests and questionnaires on cue, using Mountain-Plains procedures and teaching strategies as directed, and to avoid contamination of procedure by using those not prescribed by Mountain-Plains Staff orientation.
4. To furnish Mountain-Plains Staff with information necessary to carry out routine research functions. Specifically, student, institutional and community profiles will be asked for where available.

B. Benefits:

1. All materials and supplies furnished by Mountain-Plains will become the property of the contractor upon termination of the field testing.
2. The contractor will have first priority in obtaining Mountain-Plains products once they are published.
3. Contractors will share nationwide visibility as a result of being the subject of field testing associated with a National NIE Model.
4. Continuing consultation from Mountain-Plains Steff for the duration of field testing.

### III. CONTINGENCY CONDITIONS

The space below is to be used for special considerations which are not covered by the Responsibilities and Benefits above.

Name of Contracting Institution

Bruce C. Perryman
Executive Director, MPEEDP

Date

Contractor Signee

Date