MICHIGAN TEST FOR TEACHER CERTIFICATION

Technical Report: Appendices

OCTOBER 2024–SEPTEMBER 2025

MICHIGAN Department of Education

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Michigan Test for Teacher Certification

Technical Report: Appendices

Test Statistics
October 1, 2024 – September 30, 2025

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MTTC Technical Report

Test Statistics: October 1, 2024–September 30, 2025

Section I: Overview

Volume II of the MTTC Technical Report provides test statistics for test forms administered to at least 10 examinees during test administrations between October 1, 2024 and September 30, 2025. Total test statistics are provided as the basis for understanding the usefulness of the test for licensing decisions. Additional statistical information is provided for tests administered to at least 60 examinees. These statistics provide further information for the multiple-choice items and for the performance assignment(s) on each of the World Language tests except Italian (including Arabic [Modern Standard], Chinese [Mandarin], French, German, Japanese, and Spanish), the Latin test, the Central Office School Administrator test, and the Elementary and Secondary (PK–12) School Administrator test.

Aids to Interpreting the MTTC Statistics

A large amount of statistical information is presented in the reports that follow. Readers may benefit from a number of interpretive aids while considering these data.

- Information in these reports that is based on the test performance of relatively small numbers of examinees (i.e., fewer than 60 examinees) may not be indicative of the performance of larger numbers of examinees.
- The MTTC tests include multiple-choice items and performance assignments. Procedures for estimating the psychometric characteristics of multiple-choice items and tests are well-established and documented in the literature; such procedures for performanceassignments, and for tests that combine performance assignments and multiple-choice items, are less well-established and documented. Most MTTC tests presently consist of multiple-choice items only. Each of the MTTC World Language tests except Italian, the Latin test, and each of the administrator tests consists of a multiple-choice section and a performance assignment section. The Spanish, French, German, and Latin content-area tests each include two written performance assignments. The Chinese (Mandarin), Arabic (Modern Standard), and Japanese tests each contain eight performance assignments. The Central Office School Administrator test and the Elementary and Secondary (PK–12) School Administrator test each include one written performance assignment.

- The scores that are reported on the MTTC are scaled scores. They have been converted mathematically to a scale with a lower limit of 100, a passing score of 220, and an upper limit of 300. This is the scale used in reporting all MTTC scaled score statistics.

Test Reliability: Overview

As a term used in testing, "reliability/precision" may be defined as "the degree to which test scores for a group of test takers are consistent over repeated applications of a measurement procedure and hence are inferred to be dependable and consistent for an individual test taker; the degree to which scores are free of random errors of measurement for a given group" (*Standards for Educational and Psychological Testing* (AERA, APA & NCME, 2014, p. 222).

Every test (in fact, every measurement tool) can be expected to produce some measurement error; well-constructed tests produce a small amount of measurement error and generally yield consistent results from one measurement occasion (i.e., test administration) to another.

The process that was used to develop the Michigan Test for Teacher Certification contained features designed to ensure, to the extent possible, that the content and format of the tests would contribute to the stability of the scores derived from them. Test content is based on Michigan regulations, documents, and resources, and was reviewed for accuracy and edited for clarity. Test items were reviewed to ensure that they relate to knowledge and skills judged to be important to the job of an educator entering teaching in Michigan schools.

For the performance assignments, scoring procedures were carefully designed to include detailed orientation, explicit scoring scales and standards, and ongoing verification of scorer accuracy and consistency. Test administration conditions are standardized to be consistent across test sites and occasions.

Statistical estimates of reliability focus on the results of tests—the scores achieved by specific groups of examinees. To the extent that the quality of test materials and procedures can contribute to the underlying reliability and consistency of test scores, the Michigan Tests for Teacher Certification have been developed to ensure high test quality and to affect procedural consistency in test development, administration, and scoring.

Factors that affect statistical estimates of test reliability. Reliability is a property of test scores for a particular group of examinees, not a fixed property of a test. Many factors may affect statistical estimates of test reliability, among them the following.

Number of examinees. The number of examinees whose test scores contribute to a statistical estimate of reliability affects the stability of the estimate. Estimates based on smaller numbers of examinees are typically less stable than estimates based on larger numbers. For this reason, statistical estimates of reliability are calculated for the MTTC only for those tests that are taken by 60 or more examinees.

Self-selection of examinees by test administration date. Typically, examinees can decide when to take a particular test. The tests are offered multiple times per year, and examinees can select when to take and retake the tests. This self-selection can affect the composition, ability level, and variability of the group taking a particular test at a given test administration.

Variability of the group tested. In general, the larger the true variance or true spread of the scores of the examinee group (i.e., the greater the individual differences in the true level of knowledge and skills of the examinees in the particular group taking a test on a particular occasion), the greater will be the reliability coefficient. If the examinees on a particular occasion have generally similar levels of knowledge and skills, statistical estimates of reliability may tend to be lower.

Composite tests. Statistical estimates of reliability for tests that are composites of different types of items (e.g., multiple-choice items and performance assignments) tend to be more relevant when they are calculated on the combined, total test than when they are based on any single component (i.e., multiple-choice items alone or performance assignments alone).

Test content. Statistical estimates of reliability tend to be higher for tests that cover narrower, more homogeneous ranges of content than for tests that cover broad, varied ranges of content. Tests for educator licensure typically must test a broad base of knowledge and skills that pertain to licenses that will apply in a wide range of educational settings, grade levels, and teaching assignments.

Statistical procedures. One approach to gauging the reliability of a test is through the use of statistical procedures. As is the case with most statistical measures of test score reliability, the estimates to be included will be reported on a scale ranging from zero to one (i.e., 0.00 to 1.00). While there is no fixed standard that distinguishes "reliable" test scores from "unreliable" ones, the U.S. Department of Labor Employment and Training Administration has published in a guide, titled *Testing and Assessment: An Employer's Guide to Good Practices*, the following general guidelines for interpreting reliability coefficients (U.S. DOL, 1999, p. 3):

Reliability coefficient value	Interpretation
.90 and up	Excellent
.80–.89	Good
.70–.79	Adequate
Below .70	May have limited applicability

Adequate numbers of examinees. Statistical reliability estimates, if they are to be interpreted with any degree of confidence, must be based on adequate numbers of examinee scores that may represent some range of examinee knowledge and skill levels and that may provide some variance in examinee score distributions. Statistical reliability estimates based on few examinee scores may be highly dependent on the characteristics of those few examinees and their scores. For this reason, statistical test data are provided in this report only for test fields in which 60 or more examinees take a test at any of the operational test administrations, either paper-based or computer-based, in the program year.

Statistical measures used. A number of statistical techniques have been devised for measuring the consistency (i.e., reliability) of test scores; the choice of a specific index is based on its characteristics, precision, and practicability (Berk, 1980). The indices provided in this report are generally recommended for single-test estimation of test reliability and/or for tests comprising performance assignments and multiple-choice items.

Each statistical procedure selected for the Michigan Test for Teacher Certification provides different information about the reliability of the tests. Measures are reported for the total test and, when applicable, for each test section. However, because pass/fail decisions are made based upon the total test score only, total test reliability is the focus of interest; measures of reliability for individual sections of the test are presented for descriptive purposes only. When considering a reliability index for a single test section, it is important to keep in mind that one section of a test is usually less reliable than the total test because the test section contains fewer test items than the total test.

The statistics that are of primary interest, however, are those that describe the consistency of pass/fail decisions on the total test and the error of measurement associated with the total test. These statistics are provided in the Test Statistics Report by Test Form, which provides information on all tests; and the Technical Report Statistics by Test Field, which provides information on tests with performance assignments.

Reliability estimates for the individual sections of the tests (i.e., multiple-choice and performance assignment) are also provided for descriptive purposes only in the Test Statistics Report by Test Form. These reliability estimates should not be used in place of the total test decision consistency estimates provided.

Organization of the Data

The following reports are presented.

- Technical Report Statistics by Test Form, which provides information for all test fields in order by test field number, and in form order (A, B, C, etc.) within each field where more than one form has been administered. Tests for which no examinees registered during this reporting period will appear in the report with no data provided.
- Technical Report Statistics by Test Field (All Forms): Performance Assignments, which provides information on tests with performance assignments in order by test field number. Tests for which no examinees registered during this reporting period will appear in the report with no data provided.
- Total Scaled Score Distribution by Test Field (All Forms), for all test fields with 10 or more test-takers in order by test field number. Tests for which no examinees registered during this reporting period will not appear in the report.

The table on the following pages comprises a historical list of all MTTC tests in alphabetical order, as of October 1, 2025. Note that some fields, such as 001 Language Arts, are no longer active because they have been replaced due to subsequent changes in the testing program.

Historical List of MTTC Tests in Alphabetical Order

Field Number	Field Name
33	Accounting
37	Agricultural Education
13	Anthropology
102	Arabic (Modern Standard)
41	Art Education
21	Astronomy
64	Autism Spectrum Disorder (formerly Autistic)
96	Basic Skills (replaced by Professional Readiness Examination)
15	Behavioral Studies
74	Bilingual Arabic
79	Bilingual Chaldean
80	Bilingual Chinese
75	Bilingual Education (formerly Bilingual Other)
125	Bilingual Education
65	Bilingual French
66	Bilingual German
67	Bilingual Greek
73	Bilingual Hebrew
71	Bilingual Italian
81	Bilingual Japanese
77	Bilingual Korean
72	Bilingual Polish
69	Bilingual Russian
70	Bilingual Spanish
76	Bilingual Vietnamese
78	Bilingual Yugoslavian
17	Biology
34	Business Administration
32	Business Education
98	Business, Management, Marketing and Technology
18	Chemistry
101	Chinese (Mandarin)
115	Cognitive Impairment
56	Cognitive Impairment (formerly Mentally Impaired)
91	Communication Arts (Secondary)
50	Computer Science
14	Cultural Studies
46	Dance
62	Deaf and Hard of Hearing (formerly Hearing Impaired)

Field Number	Field Name
128	Deaf or Hard of Hearing (formerly Hearing Impaired)
47	Driver Education
82	Early Childhood Education
106	Early Childhood Education (General and Special Education)
134	Early Childhood General and Special Education (Birth–K)
20	Earth/Space Science
7	Economics
139	Elementary and Secondary (PK–12) School Administrator
103	Elementary Education
83	Elementary Education (Replaced with 103 Elementary Education)
116	Emotional Impairment
59	Emotional Impairment (formerly Emotionally Impaired)
2	English
132	English Language Arts (5–9)
130	English Language Arts (7–12)
86	English as a Second Language
126	English as a Second Language
49	Environmental Studies
40	Family and Consumer Sciences
53	Fine Arts
23	French
8	Geography
24	German
43	Health
112	Health and Physical Education Subtest 1: Health Education
113	Health and Physical Education Subtest 2: Physical Education
42	Health, Physical Education, Recreation
9	History
54	Humanities
38	Industrial Arts
87	Industrial Technology
129	Industrial and Technology Education
93	Integrated Science (Elementary)
94	Integrated Science (Secondary)
29	Italian
100	Japanese
3	Journalism
1	Language Arts
90	Language Arts (Elementary)
26	Latin
114	Learning Disabilities

Field Number	Field Name
63	Learning Disabled
48	Library Media
117-120	Lower Elementary (PK–3) Education
36	Marketing (Distributive Education)
133	Mathematics (5–9)
131	Mathematics (7–12)
89	Mathematics (Elementary)
22	Mathematics (Secondary)
85	Middle Level
39	Music Education
99	Music Education
44	Physical Education
58	Physical or Other Health Impairment (formerly Physically or Otherwise Health Impaired)
97	Physical Science
19	Physics
30	Polish
10	Political Science
135	Professional Knowledge and Skills (5–9)
136	Professional Knowledge and Skills (7–12)
296	Professional Readiness Examination (formerly Basic Skills): Mathematics subtest
196	Professional Readiness Examination (formerly Basic Skills): Reading subtest
396	Professional Readiness Examination (formerly Basic Skills): Writing subtest
11	Psychology
5	Reading
92	Reading Specialist
27	Russian
51	School Counselor (formerly Guidance Counselor)
16	Science
138	Science (7–12)
35	Secretarial Science
105	Social Studies (Elementary)
84	Social Studies (Secondary)
12	Sociology
128	Social Studies (Secondary)
28	Spanish
4	Speech
57	Speech and Language Impaired
121-124	Upper Elementary (3–6) Education
88	Technology and Design
95	Visual Arts Education
61	Visually Impaired

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Section II: Technical Report Statistics by Test Form and Technical Report Statistics by Test Field

The Technical Report Statistics by Test Form and Technical Report Statistics by Test Field (All Forms: Performance Assignments) are contained on the Annual Reporting page of the MTTC Faculty Resources Technical Manual at mttc.nesinc.com.

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Section III: Total Scaled Score Distribution by Test Field

The Total Scaled Score Distribution by Test Field report is contained on the Annual Reporting page of the MTTC Faculty Resources Technical Manual at mttc.nesinc.com.

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Section IV: References

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