
Reading Competence of Incoming First-Year Students at a Two-Year Technical College

Allen Zimmerman and Linda Houston

Introduction

Reading is a critical component of any teaching and learning experience. At the college level, textbooks and other reading assignments are typically a major part of the teaching and learning process. That students are able to read and independently comprehend textbooks and other assigned materials is one of the foundations of the college learning environment and a basic expectation of college instructors.

Recognizing that 1) the ability of students to read and interpret textbook and other assigned material is important to their success in college and 2) even well-prepared students commonly encounter problems with their reading assignments, authors of textbooks written for use in orientation courses for beginning students typically devote a chapter or section to the topic of how students can improve their skills related to reading and comprehending assigned materials. As stated in one of these texts, "make no mistake about it, textbook reading is tough work" (Gardner and Jewler, 1992, p. 81).

If independent reading and comprehension of textbooks and other assigned materials in the college environment may be difficult for even well-prepared students, what about those students who enter college without adequate reading skills? This issue is of particular importance at open-admission colleges, which typically enroll a high percentage of students who are academically disadvantaged.

The Ohio State University, Agricultural Technical Institute (OSU/ATI), a two-year technical college with an enrollment of about 700 students, is an example of one such open admission college. Typically, well over 50% of the incoming students each year are classified as "academically at risk."

As is the case at most colleges, students entering OSU/ATI are required to take the ACT or SAT and/or placement tests in English and mathematics. Based on the results, students are placed in the appropriate developmental (remedial) or regular English and mathematical courses. Historically, tests with the specific purpose of evaluating the reading skills of students have not been incorporated as part of the overall

testing of incoming students. Because of increasing concern about the level of the reading skills of incoming OSU/ATI students, English faculty obtained approval to administer a reading test as part of the overall placement testing program beginning in 1990.

Currently, although reading test scores are shared with students and advisors, they are not included in the official course placement procedure nor are students with low scores required to take a reading improvement course. Also, although results for four years of reading testing are now available, no overall analysis of the data has been conducted. Therefore, the study reported in this article was undertaken to evaluate the results of the reading tests and to discuss their implications for teaching and the curriculum at OSU/ATI and other colleges with similar student populations.

Purpose and Objectives

The overall purpose of this study was to evaluate the reading level of incoming first-year students at OSU/ATI. Specific objectives were to:

1. determine the level of reading skills of first-year students based on data for the 1990, 1991, 1992, and 1993 incoming OSU/ATI classes.
2. evaluate the reading level of incoming students compared to the readability of various categories of textbooks and other assigned reading materials.
3. make specific recommendations based on the results in terms of teaching and the curriculum at OSU/ATI and other colleges with similar populations of students.

Background Information

Communication Skills Testing, Courses, and Placement at OSU/ATI

Reading, along with writing, listening, and speaking, is included under the label of "communication skills" at OSU/ATI. Currently, incoming first-year students are placed in their first required communication skills course based on ACT English scores and English placement tests administered during summer orientation sessions.

Three communication skills tracks exist for incoming students. Students whose background and test results indicate a level of communication skills appropriate for success at the

Allen Zimmerman is an associate professor in the Engineering Technologies Division and Linda Houston is an associate professor in the General Studies Division of The Ohio State University, Wooster Campus, Agricultural Technical Institute, Wooster, OH 44691

college level enroll in the three credit course, Com Skills T111 Developing Written Expression. Those who need some but limited developmental (remedial) work enroll in the four credit course, Com Skills T110 Designing Written Expression. Either Com Skills T111 or T110 is required for all students graduating from OSU/ATI. Those students who need substantial developmental (remedial) work in communication skills enroll in the three credit course, Com Skills T101 Developing Effective Communication Skills, which does not earn credit for graduation. After completing T101, students then enroll in T110.

It is important to note that Com Skills T101, T110, and T111 are primarily writing courses, reading is not covered as a major subject area. A three credit developmental reading course, Com Skills T115 Improving College Reading, is available to students, but does not earn credit for graduation.

The communication skills courses are not required as prerequisites for any of the science, mathematics and technical courses offered at OSU/ATI. Therefore, even first-year, first quarter students can be and are enrolled in mathematics, science, and technical courses regardless of their level of reading and writing skills.

Although the Degrees of Reading Power test (described below) was added as a regular part of the orientation sessions in 1990, the test results have not been added to the criteria used in determining placement into communication skills courses. Currently, raw scores are provided to students and advisors only with the recommendation from the English faculty that those students scoring below 65 enroll in Com Skills T115.

Unfortunately, because the reading course is not required for those students with low scores on the reading test and is not a prerequisite for any other course on campus, few if any students ever register for the course. Although scheduled autumn and winter quarters, the reading course is typically canceled due to no or low enrollment. No students have completed the reading course in the past four years.

The Degrees of Reading Power (DRP) Test

There are many different types of reading tests which are used to measure, compare, and evaluate the level of student reading skills. The DRP, which is one of the most commonly used reading tests for evaluating entering college students, was selected by the English faculty for use at OSU/ATI. The DRP is a multiple choice test which evaluates the reading of prose at different levels of difficulty based on words being omitted from sentences. Each passage contains seven omitted words with five substitutions for each omission. (Sammon, 1988) The test does not have time limits, which is helpful to those students who have text anxiety or work at a slower rate. The DRP is considered relatively free of cultural biases and the need for prior knowledge of subject matter. Although the test evaluates reading comprehension and understanding, it does not measure evaluative type thinking skills. (Wood, 1987)

The DRP test results are not reported as grade levels but as DRP units which are obtained by converting the raw score into five levels of comprehension grouped in three types of

learning (Independent - 90% comprehension; Instructional - 80%, 75%, or 70% comprehension; and Frustration - 50% comprehension). As an example, a student with a raw score of 65 would have an Independent DRP unit score of 64. Instructional scores of 72, 75, and 78 respectively, and a Frustration score of 86. After reading a textbook with a DRP rating of 64, this student should be able to answer 90% of questions asked that are based on the surface meaning of the written text. However, if assigned to read a textbook with a DRP rating of 75, this student would only be able to answer 75% of questions asked that are based on the surface meaning of the written text. Likewise, if required to read a textbook with a DRP rating of 86, this student would only be able to answer 50% of questions asked that are based on the surface meaning of the written text. (DRP Handbook, 1986, p. 68)

According to Burrill (1987, p. 69) "the typical secondary content area teacher expects that students will read the textbook on their own, outside of class, with no help from the teacher (Independent level). Classroom instruction tends to go beyond the textbooks' surface meaning, to discussions of "why" and "so what," leaving the students who couldn't read the book on their own even further behind." Obviously, given the even greater emphasis on reading assignments outside of class at the college level, DRP raw scores for college students should be converted to scores at the Independent level for analysis and comparison.

Degrees of Reading Power Readability Index

Readability is typically defined in the context of student reading skills. A large number of readability indices have been developed to measure and compare the readability of textbooks and other materials. These indices are calculated based on empirical formulas which include such factors as the number of words per sentence, the number of syllables per word, and the number of unfamiliar words (those not on an established list).

The DRP Readability Index was developed in conjunction with the DRP Reading Ability Test and measures the readability of textbooks and other written materials in DRP units. This index is based on the Bormuth formula and measures the text difficulty on a theoretical scale ranging from 1 to 100. In practice, the range from the easiest to the most difficult text that can be written in the English language is about 30- 85 DRP units. (Burrill, 1987, p. 63)

Various types and levels of written materials have been analyzed for reading difficulty in DRP units in a number of studies conducted by the College Board and reported in the DRP Handbook (1986). Selected results based on several of the studies are listed in

Sammon (1988, pp. 18-19) notes that "for four year colleges, the College Board suggests using DRP scores of 70 as an appropriate predictor of success in college reading." Burrill (1987, p. 68) wrote that "the average difficulty of freshman college textbooks is about 70 DRP units."

The information presented above will be used to compare the reading skills of OSU/ATI students to the readability of various categories of textbooks and other reading materials.

**Table 1. Table 1. Readability of Various Materials in
DRP Units - DRP Handbook (1986)**

Textbooks	
<ul style="list-style-type: none"> Difficulty of textbooks in series based on publishers' intended grade placement. (Range of the middle 90% of those evaluated) (Figure 4, p. 32) 	Grade 6 - 53 to 60 Grade 7 - 53 to 60 Grade 8 - 54 to 61
<ul style="list-style-type: none"> Difficulty of high school occupational education textbooks. (Range of the middle 50% of those evaluated) (Figure 6, p. 36) 	Accounting: 66 to 70 Drafting: 65 to 67 Automotive: 63 to 66 Nursing: 66 to 71 Construction Trades: 64 to 66 Sales & Sales/Marketing: 66 to 68 Dental Assisting: 68 to 72 Secretarial/Clerical: 65 to 68
<ul style="list-style-type: none"> Difficulty of high school academic textbooks. (Range of the middle 50% of those evaluated) (Figure 7, p. 38) 	Humanities: 56 to 62 Natural Science: 56 to 64 Science: 61 to 68 Social Science: 61 to 68
<ul style="list-style-type: none"> Difficulty of college textbooks. (Range of the middle 50% of those evaluated) (Figure 7, p. 38) 	Humanities: 64 to 68 Natural Science: 69 to 72 Science: 69 to 72 Social Science: 69 to 72
"Real World" Publications and Materials	
<ul style="list-style-type: none"> Average readability of periodicals. (Figure 5, p. 34) 	Child Magazines: 53 Adult General Interest: 65 Teen Magazines: 61 Professional Journals: 74
<ul style="list-style-type: none"> Range of average difficulty of newspapers. (Table 3, p. 35): 65 to 67 	
<ul style="list-style-type: none"> Range of average values for documents used in entry-level clerical positions in an insurance company. (Table 4, p. 37): 63 to 72 	

Based on this information, it also seems reasonable to assume that the general readability level of the textbooks and other materials used at two-year technical colleges such as OSU/ATI will be in the range of 66 to 70 DRP units.

DRP Testing Procedures and Results

The DRT test has been administered to incoming first-year students during the 1990, 1991, 1992, and 1993 orientation sessions. Most of the students who attended the orientation program during these four years were tested. Typically, about 90% of the students who attend orientation enroll for autumn quarter.

The DRP raw scores were converted to DRP units at the Independent level for use in analysis and comparison and all results are given in these units. Table 2 presents statistical data for DRP test results for incoming OSU/ATI students.

**Table 2. Reading Competence Test Results for
Incoming OSU/ATI Students in DRP
Units—Independent Level (Scale: 0-99)**

Population	1990	1991	1992	1993	Total
Number	269	264	255	285	1073
Mean	66.5	63.8	67.8	67.7	66.5
Standard Deviation	13.3	14.0	13.2	12.5	13.4
Range	23-99	26-99	36-99	36-99	23-99
Median	65	64	66	69	66
First Quartile	58	54	60	60	58
Third Quartile	75	71	75	75	75

Discussion and Conclusions

Based on the statistical analysis of the DRP results for incoming OSU/ATI students as shown in Table 2 and the readability indices for various textbooks and other materials listed in Table 1, it is apparent that the reading skills of a high percentage of the first-year students are considerably below the levels recommended for students entering college or the workforce.

About 50% of the students tested during the four years could not be expected to independently read and comprehend major newspapers or general interest magazines. Likewise, these students would have difficulty with high school academic and occupational textbooks, let alone college level texts. The results also indicate that about 25% of the incoming students would even have difficulty with teenage magazines and junior high level textbooks.

It is also important to note that the results indicate a wide variation in the reading skills of the incoming students. The top 25% of the incoming students have reading skills well above the minimum levels recommended for college and considerably higher than those ranking in the lower 25% and even those ranking in the lower 50% of the population tested.

Obviously, common sense and good educational practice would dictate that students who have reading skills considerably below those typically expected for success in their first year college courses would not be permitted to enroll in these courses until they have improved their reading skills. Currently this is not the case at OSU/ATI.

Therefore, given the wide range of reading skills among students enrolling in course work at OSU/ATI, both students and instructors are placed in a difficult situation. If textbooks and other assigned materials are selected at the appropriate level of readability based on college and workforce expectations, large numbers of students will be placed at a distinct disadvantage in successfully completing courses.

On the other hand, if instructors select textbooks and other reading materials which are at a lower readability level (sometimes referred to as "dumbing down the text") in order to help those students with low reading skills or if they dedicate considerable class time to helping these students compensate for their inability to independently read and comprehend the assigned readings, they are compromising course con-

tent. In addition, such an approach is unfair to and fails to meet the needs of those students who can read and comprehend materials at the appropriate level of readability. Also, it should be obvious that any lowering of reading expectations and course standards below those required for students to understand the "real world" publications that they will encounter in employment and as informed citizens is unacceptable.

Given the results of this study, the concern on the campus regarding low retention rates, let alone good educational practice and ethical considerations, should cause questions to be raised about the current OSU/ATI policy which allows students to enroll in course work for which they do not have adequate reading skills. Therefore, the authors strongly support the recommendation that Com Skills T115 Improving College Reading be made mandatory for all incoming students whose reading skills are below those recommended for success in OSU/ATI courses. Likewise, it is recommended that Com Skills T115 be listed as a prerequisite for all regular classroom courses. Many colleges already have such a policy in place and in some states, such as Florida, this procedure is mandated by state law.

Based on the results of this study, the authors also recommend that the current informal recommendation of the English department that all entering OSU/ATI students with a DRP raw score below 65 (which translates to a Independent DRP unit score of 64) should enroll in the reading course be considered as one of the major criteria for determining placement into a mandatory reading course. This recommendation takes into account the general readability levels that would be expected for textbooks and other materials typically used at technical colleges.

What implications do the results of this study have for teaching and the curriculum at other colleges which have student populations similar to OSU/ATI? Colleges not currently evaluating the reading competency of their incoming students, in particular those with open admission policies, are strongly encouraged to initiate a reading testing program. It is also recommended that a reading course be developed and added to the curriculum for those students who need to improve their reading skills.

In recent years, considerable attention has been given to the importance of effective writing skills to the career success of graduates. Many colleges have established "Writing-Across-the-Curriculum" courses and programs on their campuses. Given the importance of reading skills to the success of students both in college and in the workforce, a similar emphasis on evaluating and improving the reading skills of students is also essential.

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BOOK REVIEWS

Wayne L. Banwart, Book Review Editor
Department of Agronomy
University of Illinois. Urbana. IL 61801

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M. Brett Callaway and Charles A. Francis (eds.).
Crop Improvement for Sustainable Agriculture.
University of Nebraska Press, Lincoln NE, 1993.
261 pp. Clothbound \$35.00.

The thesis of *Crop Improvement for Sustainable Agriculture* is that genetic improvement of crop plants effectively contributes to sustainable agricultural systems. Characteristics can be

manipulated that will result in cultivars that are productive in stress conditions and less favorable environments. These cultivars will provide growers with increased potential for profitability while minimizing environmental impacts of farming.

The eleven chapters in this book are written by authors with varied levels of experience in the breeding topics addressed. The first chapter sets the stage for the book by describing sustainable agriculture and the role of plant breeding in developing cultivars for this type of production system. The chapter raises a question: Can such cultivar development be made by shifting priorities and selection criteria with existing methodologies, or must entirely different procedures be used? This question becomes an underlying theme throughout the book. The second chapter reviews the role of breeding throughout the history of agriculture. The authors show that genetic manipulation has played an important part in agricultural development, from early plant domestication through the green revolution. The dynamic nature of agriculture is noted, along with the need for breeding methods and procedures to have the same dynamism.

A majority of the remaining chapters describe plant breeding methodology. Some chapters provide valuable insights into techniques for efficient development of cultivars for sustainable sys-