The Syntactic Density Score (SDS) is designed to determine the syntactic density of the oral and written discourse of students in grades 1-14, as well as that of reading materials selected for students. The SDS can be hand tabulated; however, a computer program is available which can determine the score from any corpus of material typed into the computer. Factors that affect readability, and therefore increase the syntactic density score of a piece of writing, include higher frequencies of complex sentences, long subordinate clauses, prepositional phrases, expanded verbs, possessives, and adverbs of time—all in addition to the usual considerations of vocabulary and sentence length. Practice exercises plus aids for tabulation are available from the author. [This document is one of those reviewed in The Research Instruments Project (TRIP) monograph "Measures for Research and Evaluation in the English Language Arts" to be published by the Committee on Research of the National Council of Teachers of English in cooperation with the ERIC Clearinghouse on Reading and Communication Skills. A TRIP review which precedes the document lists its category (Reading/Writing), title, author, date, and age range (primary, intermediate, junior high, senior high, postsecondary), and describes the instrument's purpose and physical characteristics.] (WR)
The attached document contains one of the measures reviewed in the TRIP committee monograph titled:

Measures for Research and Evaluation in the English Language Arts

TRIP is an acronym which signifies an effort to abstract and make readily available measures for research and evaluation in the English language arts. These measures relate to language development, listening, literature, reading, standard English as a second language or dialect, teacher competencies, or writing. In order to make these instruments more readily available, the ERIC Clearinghouse on Reading and Communication Skills has supported the TRIP committee sponsored by the Committee on Research of the National Council of Teachers of English and has processed the material into the ERIC system. The ERIC Clearinghouse accession numbers that encompass most of these documents are CS 201320-CS 201375.

TRIP Committee:
W.T. Fagan, Chairman
University of Alberta, Edmonton

Charles R. Cooper
State University of New York
at Buffalo

Julie M. Jensen
The University of Texas at Austin

Bernard O'Donnell
Director, ERIC/RCS

Roy C. O'Donnell
The University of Georgia
Liaison to NCTE Committee on Research
"Syntactic Density Score" (SDS)

Lester S. Golub

Primary, Intermediate, Jr. High, Sr. High, Post-Secondary

**Description of Instrument:**

**Purpose:** To determine the syntactic density of the oral and written discourse of students in grades 1-14, as well as that of reading materials selected for students.

**Date of Construction:** 1973

**Physical Description:** The SDS can be hand tabulated; however, a computer program is available which can determine the score from any corpus of material typed into the computer. Practice exercises, as illustrated, plus aids for tabulation, are available from the author. Factors that affect readability, and therefore increase the syntactic density score of a piece of writing, include higher frequencies of complex sentences, long subordinate clauses, prepositional phrases, expanded verbs, possessives, and adverbs of time—all in addition to the usual considerations of vocabulary and sentence length.

The sample passage:

I was not formally introduced to the lemming. I have since learned, however, that his family name was Lenmus Lennus, of the family Microtinae. He was five inches long and covered with tawny yellow fur. He did not run away when he saw us. But backed up against a birch root and looked as fierce as he could, which was not very fierce.

We squatted down to look at Lenmus, slapping away at the mosquitoes, which were eating our knees through our trousers, while Lenmus looked fiercely back at us. He seemed a rational enough creature.

Yet the lemming legend, Gustafson told me, is quite true. The lemmings breed very fast, and when there are too many of them for the amount of food they can find in the district, they all set off to go somewhere else. They travel toward the lower-lying land and the distant sea, and on the way they eat anything that is handy to be eaten, which is mostly stuff that the people of those parts would prefer to eat themselves. Lemmings are vegetarians, so they do not actually eat the cows, but the cows have to get along on what the lemmings leave.

The lemming horde is understandably unpopular. On its journey, which may take many months, it is attacked and set upon from all sides.
### The tabulation sheet:

<table>
<thead>
<tr>
<th>Variable No.</th>
<th>Variable Description</th>
<th>Loading</th>
<th>Freq.</th>
<th>Vlxf</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Total no. of words</strong></td>
<td></td>
<td>203</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total no. of T-units</strong></td>
<td></td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Words / T-unit</td>
<td>.95</td>
<td>12.7</td>
<td>12.1</td>
</tr>
<tr>
<td>2.</td>
<td>Sub. clauses / T-unit</td>
<td>.90</td>
<td>.87</td>
<td>.78</td>
</tr>
<tr>
<td>3.</td>
<td>Main clause word length (mean)</td>
<td>.20</td>
<td>3.2</td>
<td>1.64</td>
</tr>
<tr>
<td>4.</td>
<td>Subord. clause word length (mean)</td>
<td>.50</td>
<td>6.3</td>
<td>3.1</td>
</tr>
<tr>
<td>5.</td>
<td>Number of modals</td>
<td>.65</td>
<td>5</td>
<td>3.2</td>
</tr>
<tr>
<td>6.</td>
<td>Number of <em>be</em> and <em>have</em> forms in the auxiliary position</td>
<td>.40</td>
<td>5</td>
<td>2.0</td>
</tr>
<tr>
<td>7.</td>
<td>Number of prepositional phrases</td>
<td>.75</td>
<td>18</td>
<td>13.5</td>
</tr>
<tr>
<td>8.</td>
<td>Number of possessives</td>
<td>.70</td>
<td>4</td>
<td>2.8</td>
</tr>
<tr>
<td>9.</td>
<td>Number of adverbs of time</td>
<td>.60</td>
<td>3</td>
<td>1.8</td>
</tr>
<tr>
<td>10.</td>
<td>Number of gerunds, participals, absolute phrases (unbound modifiers)</td>
<td>.85</td>
<td>2</td>
<td>1.7</td>
</tr>
</tbody>
</table>

**Total**

<table>
<thead>
<tr>
<th></th>
<th>Syntactic Density Score (Total divided by No. of T-units)</th>
<th>2.7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grade Level Conversion</strong></td>
<td></td>
<td>4.0</td>
</tr>
</tbody>
</table>

**Grade Level Conversion Table:**

<table>
<thead>
<tr>
<th>SOS .5</th>
<th>1.3</th>
<th>2.1</th>
<th>2.9</th>
<th>3.7</th>
<th>4.5</th>
<th>5.3</th>
<th>6.1</th>
<th>6.9</th>
<th>7.7</th>
<th>8.5</th>
<th>9.3</th>
<th>10.1</th>
<th>10.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
</tr>
</tbody>
</table>
Validity, Reliability and Normative Data:

The final paper on the development and validation of the SDS is still in progress.

Ordering Information:
EDRS

Further Information -
Lester S. Colub
Professor of English Education
145 Chambers Building
The Pennsylvania State University
University Park, Pennsylvania 16802
Some Aids for Tabulating Golub's SYNTACTIC DENSITY SCORE

Besides vocabulary and length of sentences, there are some other factors that affect readability. Higher frequencies of complex sentences, long subordinate clauses, prepositional phrases, expanded verbs, possessive, and adverbs of time have been found to increase the syntactic density score of a piece of writing.

Some aids for tabulation:

1. T-unit: count as a T-unit a main clause with all of its dependent clauses.

2. Subordinate clauses: watch for subordinate conjunctions:

   after
   although
   as
   as much as
   because
   before
   how
   inasmuch as
   in order that
   provided that
   since

   also: who, whoever, whom, whomever, whose, whosoever, which, how

3. Modals:

   could
   can
   may
   might
   would

   should
   will
   shall
   must
   ought to
4. Forms of be and have:

be  boon
is  has
are  have
an  had
was  isn't
were
being

5. Prepositions:

about  below  from  to
above  beneath  in  toward
across  beside  into  under
after  between  like  underneath
against  beyond  of  until
along  by  off  unto
and  concerning  on  up
among  by  down  over  upon
around  during  past  with
at  except  since  within
before  for  through  without
behind  besides  throughout

6. Possessives

Include possessive nouns and the following pronouns:

my  hers
mine  our
your  ours
yours  theirs
his  theirs
her  its
7. Adverbs of time:

<table>
<thead>
<tr>
<th></th>
<th>now</th>
<th>afterwards</th>
<th>immediately</th>
<th>beforehand</th>
</tr>
</thead>
<tbody>
<tr>
<td>when</td>
<td>often</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>then</td>
<td>after</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>once</td>
<td>afterwards</td>
<td></td>
<td></td>
<td>never</td>
</tr>
<tr>
<td>while</td>
<td>lately</td>
<td></td>
<td></td>
<td>before</td>
</tr>
<tr>
<td>whenever</td>
<td>immediately</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>soon</td>
<td>yesterday</td>
<td></td>
<td></td>
<td>tonight</td>
</tr>
<tr>
<td>soonest</td>
<td>today</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>later</td>
<td>sometimes</td>
<td></td>
<td></td>
<td>forever</td>
</tr>
</tbody>
</table>
Apply Golub's SYNTACTIC DENSITY SCORE to the following passage:

This very minute lizard with changeable colors is catching insects with the end of a tongue as long as its body. Close to the bottom of a river, a fish is defending itself by jolting its enemies with built-in electric shock equipment. In the tropics an almost brainless animal is spending a large part of its life upside down. And on another part of the earth a queer, furry, leatherly-beaked animal with poisonous spurs on its hind legs is laying eggs.

These are only a few of the strange beasts that you can see in the world today. All of them are very much alive although they may appear too astonishing to be real. But a great many years from now a lot of them will have vanished forever. Those kinds which remain will probably be so changed that you would hardly recognize them. We know that this will happen because dozens of scientists have shown that nearly every living thing is always turning into something a little different or disappearing entirely. The earth itself is constantly changing, too.

We have fossil remains that show us the changes that have taken place throughout the ages in certain animal and fish groups.

from Popular Science Monthly
# SYNTACTIC DENSITY SCORE

## Tabulation Sheet

<table>
<thead>
<tr>
<th>Variable Number</th>
<th>Variable Description</th>
<th>Variable Loading</th>
<th>Frequency</th>
<th>VLXF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>total number of words</td>
<td>.95</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>total number of T-units</td>
<td>.90</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>words/T-unit</td>
<td>.20</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Subordinate clauses/T-unit</td>
<td>.50</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Number of Modals (will, shall, can, may, must, would.....)</td>
<td>.65</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Number of Be and Have forms in the auxiliary</td>
<td>.40</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Number of Prepositional Phrases</td>
<td>.75</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Number of Possessive nouns and pronouns</td>
<td>.70</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Number of Adverbs of Time (when, then, once, while...)</td>
<td>.60</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Number of gerunds, participals, and absolute phrases (unbound modifiers)</td>
<td>.85</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

## Total

<table>
<thead>
<tr>
<th>SDS</th>
<th>S.D. Score (Total/No. of T-units)</th>
</tr>
</thead>
</table>

## Grade Level Conversion Table:

<table>
<thead>
<tr>
<th>SDS</th>
<th>0.5</th>
<th>1.3</th>
<th>2.1</th>
<th>2.9</th>
<th>3.7</th>
<th>4.5</th>
<th>5.3</th>
<th>6.1</th>
<th>6.9</th>
<th>7.7</th>
<th>8.5</th>
<th>9.3</th>
<th>10.1</th>
<th>10.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade Level</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
</tbody>
</table>

© 1973 by Lester S. Golub