An ethnographic study of five clerk-typists and five applications clerks in a large federal agency included observations, interviews, and a 3-week job literacy program. Both in their performance on job tasks and in the tests and exercises in the literacy program, the clerks demonstrated a number of strategies by which they quickly locate information: sorting, avoiding, searching, relying on oral information, and using manuals. In sorting, checklists (that were developed by another group of employees) that bore little resemblance to the tasks were reorganized by the clerks. Avoidance strategies included making sure all necessary information was included before starting a task, looking for key words, and looking for the expected sequence of documents. In searching, the use of key words, of the sequence of papers within a file, and of format clues enabled the clerks to locate and verify information effectively. The clerks relied on asking for help orally rather than attempting to use manuals, as they learned their jobs by the trial and error of doing them, not through formal instruction. Homemade "manuals" were more widely used than agency manuals. The importance of ethnographic studies of literacy, which illustrate the degree to which people exceed others' expectations of their literacy skills, was identified. (A nine-item reference list is included, along with eight examples of clerical tasks.) (CML)
FUNCTIONAL LITERACY OF CLERICAL WORKERS:
Strategies for Minimizing Literacy Demands and Maximizing Available Information

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Literacy provides both the process and the product of clerical work: it is the means by which clerks perform their tasks and the products which result from them. Thus, literacy tasks are of crucial importance in clerical work. A number of studies have demonstrated the complexity of the literacy demands in clerical work. Diehl (1980) found that clerical workers spent more time reading, involving more complex documents (as measured by readability indices) than did professional, managerial, or technical employees. Among the skilled occupations studied by Moe (1979) and the military occupations studied by Sticht and his colleagues (1975), clerical work had the highest literacy requirements.

However, clerical workers often have limited education and are frequently members of ethnolinguistic minority groups who speak a nonstandard variety of the language. How, then, are they able to function in their jobs? This was the motivating question for this study: how do women who at most have a high school diploma, who speak a nonstandard variety of English, and who have little or no scientific or legal education function as clerks in an agency which produces and processes documents written by and for lawyers and scientists/engineers?

The setting for the study was a large federal agency which employs over 1000 clerical workers. The majority of these workers are black women, and of these, many speak a variety of nonstandard English. The professional staff of the agency is principally white, highly educated, and drawn from legal,
scientific, or technical professions. The documents which flow into the agency and which are produced by the agency are written in what Joos (1967) would characterize as "formal" style, with many features of "frozen" style as well: that is, they are replete with Latinisms, archaic stylized phrases drawn from the law, and truncated or elliptical expressions characteristic of both legal and scientific writing. (See example 1.)

Ten clerical workers, representing two types of clerical work, were studied using a variety of ethnographic and experimental approaches. Five of the clerks were clerk-typists, several of whom had to type from dictation or poorly written drafts, often with little assistance in clarifying spelling, capitalization, or format. (A sample of one dictated draft is provided in example 2.) The other five clerks were applications clerks, the highest clerical position within the agency, involving responsibility for keeping files on applicants, identifying the function of documents and labeling them in the file records, making amendments as directed by applicants or professionals within the agency, and verifying that a case is accurate and complete before it is published. (The nature of applications clerks' work can be better understood by looking at example 3, directing a series of amendments which the clerk is to make, and at example 4, a document whose function has to be identified and "entered" with an appropriate label into the historical record of the case.) All these clerks work under taxing production standards; for example, they must "process" 13 new cases, type 4.8 pages, or enter amendments (deleting, adding, or substituting information on submitted documents) at the rate of 4.3 cases per hour.

As is often the case with bureaucracies (at least federal offices in Washington), there is a widespread perception—shared by the clerks—that the clerical workers suffer from "reading problems," "comprehension problems," and the like. Thus, the agency offered an extreme case for testing functional
literacy and for determining how well clerks cope with lack of prior education in the fields represented by the documents with which they work and with limited access to information on the job. Observations of these clerks over several days, interviews with them about their work and their perception of their reading and other job skills, as well as "think-aloud" approaches used by Flower and Hayes (1979) in their writing research, provided an opportunity to identify the strategies which these clerks have developed to minimize literacy tasks and maximize the limited information available them from the documents, the job task, or the work setting. In addition, the clerks participated in a three-week job literacy program in which a variety of miscue, cloze, and other reading tests and exercises were administered. The clerks demonstrated a variety of successful strategies and also an ability to accurately produce the legal and scientific discourse required of them. In fact, their speech becomes peppered with legal terms such as "pro se's" or "cases going abandoned" (see example 5) and the like, but the dialect-related features such as the deletion of third person, plural, or possessive -s, past tense -ed, or copula persists and is probably a reason for the perceptions of "reading" and "writing" problems. (In fact, most of the clerks interviewed and studied were taught by phonics approaches, and it is not difficult to imagine their being "corrected" for dialect-related miscues, which were not errors at all, but which succeeded in undermining their self-confidence as readers.)

Both in their performance on job tasks and in the tests and exercises in the literacy program, these clerks demonstrated a number of strategies by which they quickly locate information (exploiting the redundancy in both the texts and tasks in their work, using context cues from within and outside the texts to hypothesize and confirm their hypotheses about word and text meaning, function, or form through collocations, key words, format cues, and the like.) Over time, clerks acquire an understanding of the nature of
the agency's work and the types of information which flow into and out of it. They learn how to avoid unnecessary reading and/or writing. They develop means of using only the essential portions of texts and even develop ways of arranging their workday to focus on one type of task and thus reduce errors which would occur from distractions or shifts in tasks. These strategies can be classified into a useful heuristic sequence (although one which is not necessarily followed for each task); these involve strategies of 1) sorting; 2) avoiding; 3) searching; 4) relying on oral information; and 5) using manuals.

1) SORTING - All clerks sorted their work in the morning and performed only one type of task during any period of time. During the observations, no clerks were ever seen moving randomly through piles of work or simply taking the next case from a pile on the desk. Instead, clerks divide the work according to task and complexity and set aside a portion of time for each kind of work. What this allows is a quick processing of information such as that contained in checklists for new cases (see example 6) and prevents clerks from forgetting portions of the work to be checked. As is so often the case with checklists, manuals, and other documents intended for use by one group of employees, but developed by another, these checklists bear little resemblance in their order of presentation to either the order of information within the file or to how clerks would likely locate the information. Thus, clerks develop their own schema by which to process these cases (and thus make possible a processing requirement of 13 cases per hour). When clerks are preparing a file for publication, they simply verify that everything is in the file, is located in the proper position, and is accurately reflected on the outside of the file. If, in the final check, they discover that amendments have not been entered or papers are not recorded, they do not stop to do so. They simply set them aside, and return to them as a unit, after they have finished the other processing. Thus, they are able to keep the framework
of the checklist in mind while doing a number of cases and are not forced to look backwards and forwards from the checklist to the texts and vice versa to enable them to complete the checking. The schema developed by each clerk varies. Some look through an entire case and then check off all the items on the list; others look at the first document, check off items which apply, and then move to the next document; still others "chunk" the information in other ways. The least accurate clerk was the one who was unable to keep a framework in mind and was forced to go item-by-item through the checklist and flip through the file to verify each item.

2) AVOIDING - A second strategy involves avoiding unnecessary work or unnecessarily difficult work. For example, clerks are careful to see that documents meet minimal requirements of acceptability before they do any more reading and writing with it. If it lacks a signature, if two instances of the same number differ, if an inappropriate format has been used, the document is set aside to be corrected by someone else and no further attention is paid it by the clerks. Typists, especially, have devised ways of simplifying their work. They carefully select the cases which they type, avoiding those written by professionals with "illegible" handwriting or those who use "poor grammar" (usually dialect-related errors similar to those the clerks made), since the clerks know that they will be expected to correct the errors. One typist reported that she selects cases dictated by those who "dictate well": that is, they spell unfamiliar words, provide punctuation, and carefully enunciate the endings of words. Undoubtedly this has a salutory effect on the quality of the handwriting and dictating within the agency as a whole, since those who present the most problems find their work repeatedly left until last.

Clerks also develop strategies for avoiding unnecessary writing. For example, rather than copy an entire amendment such as "ANTI-DIABETIC 1,2-DIHYDRO-2-OXO-6-ALKYL-NICTONIC ACIDS", (see example 7), they simply attach
the page, write "Ins. a₁" or "Sub. b₁" in the margin. Clerks rarely write more than a few words on a document. Instead, they simply give directions by which the printer can make changes and thus reduce the likelihood of inserting errors of their own, something which could easily occur given the complexity of the text being transferred, added, or deleted.

Clerks also develop strategies for avoiding unnecessary reading, something which was often misinterpreted by both the clerks and their supervisors, as a "reading problem," when in fact it represents functional reading. Clerks look for key words which will enable them to quickly identify and label a document. If the words "I claim priority" are present in a text, then the clerk can quickly label the case priority, without reading the rest of the argument. Only when there is a discrepancy, as for example when a case both claimed and negated a claim for priority, did the clerk need to read the text, until she found the words, "Although in a previous document I claimed priority . . . now . . . ." If a paper, through its format or display, emphasizes a list of references, then the clerk knows that the document can only be dealing with "Prior Art" (that is, the State of the Art in the field) and unless there are foreign language texts and translations, need only be labeled as "Prior Art," and not as "Prior Art Translations."

The expected sequence of documents within a case history also provide cues to rapidly identify and process documents. For example, if the case history on the outside of the file indicates there has been a "Petition to License" to enable an applicant to file in another country, then the next document which has a key word, "license," is likely to be a "License Granted." If the last item listed in that history was an "Examiner's Action," then the next document submitted, regardless of what an applicant may label it, must function as a "Reply Brief," since as one clerk reported, "That's the
only one well accept."

3) SEARCHING - The use of key words and collocations, of the sequence of papers within a file, and of format clues all enable the clerks to effectively locate and verify information. Over time, the repetitiveness of job tasks and expected sequences and formats of documents result in a kind of accretion of understanding about the documents and their functions and clerks who have worked with them develop sophisticated means of exploiting these clues. Clerks who are newer at a task or the agency work may not be able to do so. An experienced clerk would be able to turn directly to the list of patents in example 4 and determine that the function of the paper (ludicrously entitled "Communication" by the presenting attorney) was a "Prior Art Translation"; however, a clerk who was relatively new at this task set this one aside for assistance from her supervisor.

Typists, especially, become very efficient at using the predictability and repetitiveness of their work for both locating and verifying information. They become familiar with lexical items, syntactic patterns, and even whole passages of their work, and thus, can type from dictation or from poorly written drafts, such legal and bureaucratic passages as "It would be obvious to one skilled in the art" or "A duly certified copy is requested" or "In the matter of the above-entitled application." Even difficult lexical items present limited problems, since typists learn where to look for verification of their hypothesized spellings. One typist, during observation, successfully located and spelled "isocyanate reactive group," "oligomer," "terephthalic" and "di-carboxylic acid." For "isocyanate reactive group" and "di-carboxylic acid," she used the immediate context or collocation to guide her, finding "acid" and "group" and then working backwards to the word in question. For the others, she looked for a word which had the same initial shape as she imagined these words had, using other documents within the file as her reference. Some words are learned through repetition. One
clerk typed "prepolymer," "difunctional," and "adduct," without having to refer to any other source for confirmation, since she had typed these words before. Thus, few errors in technical, scientific, or legal terms were encountered in the typed documents. Typing errors which were present were likely to be those which resulted from dialect interference or from common typing transpositions or other errors.

Using predictable formats, sequences, and phrases increases the clerk's speed in locating and verifying information. It also helps clerks to resolve ambiguities and determine what is needed to complete certain documents. When a document lacks a relevant heading or textual framework from which to evaluate it, clerks call upon their knowledge of office procedure and processing to provide a "pre-supposed aboutness" (Eco 1979) of the text and then search for key words or phrases which support or reject that presupposition. Thus, a paper labeled, "Response to Final Rejection" was re-interpreted as the clerk to be a "Request for Reconsideration" on the basis of her knowledge of what kinds of actions applicants may take when their case has been rejected. (These clerks exhibit a good example of the Cooperativeness Principle described by Grice 1975. That is, they assume that the writer is intending to be relevant, to provide enough information to be understood, and is attempting to do so in an appropriate manner, even if the writer may have failed. Thus, through the use of the various clues provided by the work flow, the formats of documents, and the key words contained therein, they are often able to accurately determine the writer's intent and complete the processing of the document in question.)

4) RELYING ON ORAL INFORMATION - Sometimes, however, they are unable to do so. Then they have two courses available to them: to turn to others and ask for help orally or to turn to written references or manuals for assistance. Overwhelmingly, clerks choose the former, and thus, in the process, reduce further the amount of reading that they might do. Clerks ask each other how
a word should be spelled, whether it should be capitalized, what to do with a fee that has been calculated improperly, or where to take misfiled papers. They shout across the room for a cut-off date for processing various papers and they congregate around one clerk's desk to work out difficult mathematical problems. They even have a predictable sequence for seeking help, turning first to co-workers, then to a supervisor, and then (and only rarely) to a member of the professional staff. This pattern of asking others for assistance is established from the outset, since clerks learn their jobs by doing them, not through formal instruction, but by trial-and-error and asking for help from co-workers and supervisors. Sometimes this reliance of oral information can lead to what one supervisor termed "being wrong by consensus," but usually the group explanation process is a valuable learning process and results in accurate texts. The one clerk in the group who was having the most difficulty in her work was also the one who was most reluctant to ask others for help. As a result, she was forced to rely on manuals for help, a strategy which not only increased her amount of reading time, but also failed to answer her questions, given the problems inherent in the manuals which were available.

5) USING MANUALS - In general, clerks rely very rarely on manuals, consulting them only as a last resort. Typists did use some, especially for verification of word-division or spelling. And clerks who type from dictation refer to manuals more frequently than do those who type from hand-written drafts, because they have fewer visual cues to guide them and the oral cues can be very confusing, especially given the differences in the linguistic repertoires of the clerks and the writers.

However, when they use manuals, clerks are often remarkably efficient at being able to choose the best one. One clerk-typist knew to look for "esterified" and "flexural" in a general dictionary, rather than a chemical dictionary, but to look for "particulate" in other papers in the file, rather
than in a manual. (When I tried to locate "flexural" in the file, it took almost 5 minutes and more than 30 pages before I found it on page 8 of the 8th paper in the file!)

Clerks are more likely to refer to their home-made "manuals" than to any of those provided by the agency. One clerk has converted her rolodex into her own dictionary of "hard words," entering new ones as they appear on her drafts. Another has a number of stenographers' notebooks with memos to herself about what to do with a variety of texts or in problematic situations. The only time that a clerk was observed using the Clerical Manual, ostensibly written for the clerical staff, the result was only frustration and confusion, with no resolution to the question being asked. One look at the instructions she was to follow explains why. (See example 8.) If ever there were a case for document re-design, here is one!

In general, clerks develop an excellent sense of when manuals will help and when they will not. They usually turn to them only when all else fails, since the information can usually be located or verified more rapidly using clues within the text or information provided orally by others in the office.

Perhaps the most important conclusion which can be drawn from this examination of the literacy requirements of some clerical workers and the various strategies which they use to fulfill their job tasks is the incredible flexibility and inventiveness which they demonstrate in working under demanding conditions. That is, speaking a different variety of the language, without the additional educational training which would enable them to understand much of the subject matter (scientific and technical) and the purpose (legal) of the documents with which they interact, and having little access to clarifying information on the job (except through the oral assistance of co-workers and supervisors), they perform quite
well and are able to attain high productivity in less than ideal conditions. While they cannot explain much of the content of the documents with which they work, they are able to obtain from these documents the information they need to perform their jobs, using a variety of strategies which enable them to minimize the reading and writing that they do and maximizing the information which they can get from the texts and their work.

These strategies are developed over time on the job and are not taught in any formal sense. As clerks learn from each other, as they learn from trial-and-error each new task, they also acquire, sometimes unconsciously, strategies for efficiently completing the work. As a result, clerks who have worked the longest with the agency and in their own job are likely to perform their job literacy tasks most efficiently. Over time they not only acquire strategies for simplifying and reducing the literacy requirements of their work, but they also become more familiar with the topics and sequences of their work. They gradually acquire familiarity with legal and scientific registers, even using them unconsciously in their speech. They may not be able to define "polymerization" or "halogenation," but they can locate these words when they need to verify their spellings, or even type them without looking elsewhere, since they have typed them often enough to not even need to look elsewhere or to ask others for confirmation of the spelling.

Not only did these clerks display efficient reading and writing skills on the job, but they were also able to transfer these to general reading materials as well. In their cloze tests, class activities, and oral reading tasks, they demonstrated the same ability to efficiently locate information, identify similar words, and use a variety of textual and extralinguistic cues in their analyses. They did have problems when required to look forward in a text to resolve ambiguities, whether on the job or in the class activities.
They were more likely to look back through a text for information or confirmation. In addition, although they were able to cope quite well with scientific and legal discourse, they continued to have difficulty with interference from nonstandard features of their own speech, and occasionally, of the speech of those who dictated drafts for them. Some have developed a sensitivity to this problem, either choosing drafts dictated by those who provide inflections (for example, saying "deemed, d-e-e-m-e-d") or paying particular attention to the ends of words (often resulting in hypercorrection).

Dialect-related interference may have caused self-perceptions which underestimated literacy skills. Some of their literacy skill assessments also stemmed from their views of reading; they variously referred to reading as "being able to pronounce the big words" or "being able to define the 'hard' words" or "reading for the main idea" when little of this was really necessary for them to be successful in their work. At the heart of the problem, undoubtedly, was their experience as readers in school, which made them believe they were poorer readers than they were.

A job literacy program provided them with an opportunity to confront their own skills and in the process, to develop a better appreciation of their own abilities. However, their co-workers are likely to continue talking about "reading problems" and to contribute to the cries of alarm about rising levels of "functional illiteracy" or worse, of "functional incompetency" among the population as a whole. Thus, it is important to continue and to expand ethnographic studies of literacy, which illustrate the degree to which people exceed others' expectations of their literacy skills. In future research, perhaps it would be enlightening to administer standardized reading tests to these and other workers--where tasks are presented in isolation from any meaningful context--to determine the different between what standardized reading tests predict and what people are really able to do. Although standardized reading tests might find what Newsweek termed a "blight of illiteracy," naturalistic observations might identify situations where functional literacy is very much alive.
REFERENCES


Examples

1. Secondly, in view of Whittingham's showing of chalcogenide batteries as being old and Asano's showing of a state of charge indicator in a timepiece comprising plural switching means 33, 34, 32G, 32R, and plural electrically responsive display elements a-g and a'-g', as well as arrays of single crystal photovoltaic cells for recharging and electromagnetic coupling of microwave energy to a voltage regulator circuitry as being well known, it would be obvious to one of ordinary skill in the art to modify the device of Aoki et al. by substituting an intercalated chalcogenide battery having a state of charge indicator comprising plural switching means each of which is responsive to a preselected voltage level of said battery and supplying battery originating voltage to selected elements of a display when the battery voltage is at or above a preselected voltage level and having recharging means comprising about ten single crystal silicon cells each having an area of about 20mm or an electromagnetic coupling of microwave energy to the voltage regulator circuitry to recharge the battery for the battery 1 of Aoki.

2. Claims 2-13 are rejected as obvious in view of the British patent considered with Neven ('953) under 35 USC 103.

The British patent discloses a composition and method for fabricating abrasive tools comprising an abrasive material (polycrystalline diamonds), metallic powders, (copper and tin), and refractory components such as borax and potassium oxide fluoride readable on the recitations of the instant claims. Note particularly page 1, col. 1, lines 27-35, page 2, col. 1, lines 39-48, col. 2, lines 73-80, lines 84-96, lines 101-102 and lines 108-113 and page 4, col. 1, lines 13-18.

Neven is relied on to show the conventionality of mixing borofluoride components with abrasive materials in manufacturing abrasive articles...

In view of the above references, it would be considered an expedient in the sense of 35 USC 103 to form applicant's claimed compositions. Applicant's arguments as presented in the remarks of March 27, 1980 have been considered but are not deemed convincing for the reasons pointed out in the above rejections.

This rejection is made FINAL.

3. "line 15; change 'as having' to --in--. After 'configuration' insert--as seen in Figures 3 and 4--"
"line 22; delete 'a' (second occurrence.) Change 'Now, a' to--The--"
"line 2 after 'thereof' and before the comma, insert--and extending tangentially to said curved band--"

4. COMMUNICATION

In connection with the above-identified application, applicants are enclosing herewith a copy of each of the following:

Japanese Laid-Open Patent Publication 63775/74
Japanese Laid Open Patent Publication 55646/74


The above-listed publications are directed to benzil ketal derivatives different from those of the present invention. The above-listed publications and patents represent the closest prior art known to applicants, although no representation is made that a search of the prior art has been carried out or that no more pertinent prior art exists.
5. "If he don't send in nothin' in 3 months, this case, it gonna go abandon. Next Monday, we be pullin' the abandonments; I have to be sure he's on record in the case and that it's timely filed."

"The application is in condition for allowance but there are some statutory requirements that have to be taken care of—some formal matters. It happen to be the name of a person that a decision was made in court."

6. Notice of Informal Application

This application is informal for the reason(s) checked below.

The period within which to correct these informality and avoid abandonment is set on the attached paper.

☐ The oath or declaration is defective for the reason(s) checked below. A DECLARATION (or oath) identifying this application by the above Serial number and date in compliance with Rule 68 of the Rules of Practice is required.

A. Rule 63 has not been complied with in that:

1. ☐ The terms "original" and/or "first" are omitted,
2. ☐ The clause re:"public use" "on sale" or "printed publication" is omitted,
3. ☐ Applicant's citizenship is omitted,
4. ☐ Reference to "male" or "female" in title has been omitted or has been used improperly,
5. ☐ An improper oath or declaration is been used,
6. ☐ The date of execution is omitted, incomplete or more than three months prior to filing,
7. ☐ The inventor's signature has been omitted, or is in the wrong place,
8. ☐ The inventor's name and venue city or are omitted or the jurat has been omitted (USPTO section 604.02),
9. ☐ The terminal certificate has been omitted or is signed by an officer who does not identify his position, or whose authority to sign has been omitted. (See Rule 66 (a)).

☐ The papers are not properly sealed. The DECLARATION (or oath) required above should refer to the papers as filed.

B. ☐ Permanent link or its equivalent in quality as required under Rule 72 (a) has not been used for that:

1. ☐ Signature 2. ☐ Oath or declaration 3. ☐ Specification

C. ☐ Non-initialed alterations have been made to the oath or declaration (See Rules 52 (c) and 56).

D. ☐ The declaration clause regarding "with false statements..." as required by Rule 68, has been omitted.

☐ Other

II. The papers are defective. Applicant is required to provide:

A. ☐ A statement over applicant's signature giving his complete name "including at least one given name without abbreviation" as required by Rule 57.

B. ☐ Proof of authority of the legal representative under Rule 44.

C. ☐ An abstract in compliance with Rule 72 (g).

D. ☐ A properly executed affidavit signed by all of the inventors stating the data on which the unsigned and/or omitted alterations in pages or paragraphs were made, if such changes were made after the date of the oath or declaration, an amendment, cancelling these alterations is required.

E. ☐ A statement over applicant's signature giving his complete Postal Office Address.

F. ☐ A statement over applicant's signature giving his complete Postal Office address and city and state (or foreign country) of residence.

G. ☐ A statement giving applicant's correct city and state (or foreign country) of residence, if it is the same as that of the his First Office address. NO FURTHER RESPONSE IS NECESSARY.

☐ Other

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"General information Concerning Patents"

☐ Copy of a patent to aid applicant in making corrections.
NEW APPLICATIONS FILED UNDER RULE 60

The former rule 147 division practice and streamline continuation practice have been superseded by the change in the Rules of Practice establishing 'rule 60,' which became effective on September 1, 1971.

The rule 60 practice was developed to provide a procedure for filing a continuation or divisional application where hardships existed in obtaining the signature of the inventor on such an application during the pendency of the prior application. Under the rule 60 practice, persons having authority to prosecute a prior copending application are permitted to file a continuation or divisional application without requiring the inventor to again execute an oath or declaration under 35 USC 115, if the continuation or divisional application is an exact copy of the prior application as executed and filed. IT IS PERMISSIBLE TO REYPE PAGES TO PROVIDE CLEAN COPIES.

Where the immediate prior application was not signed (for example, where it was filed under the former rule 147 or current rule 00 practice) a copy of the most recent application having a signed oath or declaration in the chain of copending prior application under 35 USC 120 must be used.