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Priority of Reading Instruction Revisited: Evidence From a Regression Analysis of Adult ESL Learners' Reading Ability

Zhihui Fang

Historically, there has been an intense debate over the most effective approach to instruction: bottom-up versus top-down (Adams, 1990; Chall, 1967; Grabe, 1991; McCarthy, 1991; Swaffar, 1988). With the increasing emphasis on the role of context in literacy activities (Anderson and Pearson, 1984; Lave, 1988; Steffensen, Joag-dev, and Anderson, 1979), reading research in English as a second language (ESL) has in the recent past focused on the effects of prior knowledge, or schemata, on comprehension (Carrell, 1984, 1987; Dubin and Bycina, 1991; Lee, 1986). Most of these studies generally reported significant effects of background knowledge on reading performance. Concomitantly, the proliferation of recent instructional approaches also reflected a clear tendency to over-emphasize the role of background knowledge and devalue the role linguistic knowledge plays in the comprehension process (Fang, 1993; Yule, 1986). Mitchell (1982) and Perfetti (1989) pointed out that the experimental manipulations in such studies often tilted the balance in favor of the kind of processing that is guided by top-down effects. Therefore, caution needs to be exercised in the interpretation of their findings.

However, in ESL reading instruction, the trend towards a more holistic or whole language approach continues. Reading is seen by many teachers as simply providing background knowledge through schemata-activation sessions such as brainstorming or questioning prior to the reading task (Anderson and Pearson, 1984; Fang, 1993). Meanwhile, many teacher education programs throughout the nation have witnessed a renewed emphasis on equipping preservice or inservice language teachers with techniques and methods for organizing schemata-prompting activities, with decreased attention to the linguistic symbols (e.g., grammar) in the text (Yule, 1986). As a result, even the so-called advanced ESL learners are not linguistically well-equipped to read both proficiently and independently (Evans, 1988). This poses the question of whether reading instruction should focus on fostering ESL learners' linguistic ability or on increasing their storage of background knowledge. The purpose of this study is to address this enduring dilemma.

The study

Subjects. Participants in this study are all adult students enrolled in an Intensive English Language Training Program (IELTP) at a large university in southern China. The program has three language proficiency levels and offers courses (listening, reading, writing, grammar, and conversation) aimed at helping its students pass the Test of English as a Foreign Language (TOEFL) from level one (low) to level three (advanced). The size of each class varies from 15 to 20. Incoming students are placed at their current respective levels based on their total scores on the Michigan Placement Test administered at the beginning of each semester. Instructors in IELTP include graduate students in English, as well as faculty with master degrees in English or Applied Linguistics.

Thirty students were sampled using a stratified sampling technique. Ten students were randomly selected from each of the three levels. The age of these subjects ranged from 20 to 46. There were 19 males and 11 females in the sample, from all walks of life and with diverse educational backgrounds (e.g., factory workers, business owners or managers, high school students and teachers, college students and professors, government employees, doctors).

Materials. Texts used in the study are four passages of approximately 500 words each. They were taken from a reading packet designed by the IELTP staff. Passages one and two, dealing with evolution and earthquake respectively, were familiar to the subjects because these two topics had been covered in their previous reading materials. Passages three and four dealt with cubism (an art movement) in the west and the American judicial system, and both were unfamiliar to the subjects. Each passage is followed by 15 multiple choice questions testing main ideas, inference, and other skills. In addition, a 40-item comprehensive grammar test, developed by the IELTP staff, was used to assess the subjects' language proficiency level.

Administrative procedures. In a regular IELTP classroom, the thirty subjects were tested on reading comprehension. Seats were randomly assigned. The test is made up of two forms: form A contains passages 1 and 2 and form B includes passages 3 and 4. Both forms were printed on 8.5 x 11" white paper and were randomly distributed so that half of the subjects received form A and the other half received form B. Every subject read either form A or B and completed 30 multiple choice questions that followed. Sufficient time was allowed for this task. The subjects were told by their instructor (who administered the test) that they were doing a simulated TOEFL on the reading portion. However, they were not told

that they would be given a grammar test later. Two days later in the same classroom, the 30 subjects were asked to complete a 40-item comprehensive grammar test (multiple choice). This test lasted about 30 minutes. In both tests, standard answer sheets were provided.

Scoring procedures. Both tests were window-scored (Borg and Gall, 1989). The total number of correct answers for each test was calculated separately for each individual. Each item has only one correct answer out of four possible choices so that the total possible score is 30 for the reading test and 40 for the grammar test.

Data analysis. To achieve the objective of this study, a multiple regression analysis was employed. Specifically, the reading comprehension score (COMP: Y) was used as the dependent variable and the language proficiency test score (LANP: $X[1]$) was used as an independent variable. In addition, an indicator variable, text familiarity (TYPE: $X[2]$), was used also as an independent variable (e.g., familiar 0 versus unfamiliar 1). The interaction between LANP and TYPE is treated as the third independent variable and an SAS computer program was used.

Results and discussion

The normal probability plot of residuals, which is not shown here, does not indicate any systematic departure of error terms from normality. Therefore, the following full regression model is deemed appropriate: $COMP = B [0] + B [1] LANP + B[2] LANP *TYPE + E$ [$E \sim iid N (0, 1)$] — (1). The results in Table 1 show that the regression coefficients for both LANP and TYPE are significant ($T[b1] = 7.09, p = 0.0001$; $T[b2] = 3.96, p = 0.0005$). This suggests that both language proficiency and text familiarity make significant contributions to reading comprehension.

Table 1
Parameter estimates

<u>Parameter</u>	<u>Estimates</u>	<u>T</u>	<u>PR./T/</u>	<u>Standard error</u>
INTERCEPT	8.7977099	4.25	.0002	2.06966628
X[1]: LANP	.50715649	7.09	.0001	.07156949
X[2]: TYPE	-11.8237873	-3.96	.0005	2.98680454
X[1] * X[2]: LANP*TYPE	.27777351	2.65	.0136	.10495856

The negative value of [b2] (= -11.824) indicates that when reading unfamiliar text, reading performance is likely to decrease as compared to when reading familiar text. Additionally, the interaction between language proficiency (LANP) and text familiarity (TYPE) is highly significant (T = 2.65, $p = 0.0136$). Notice that in Tables II and III, LANP (X[1]) alone accounts for approximately 68 percent of the variation in reading comprehension ($R[2] = 0.675473$). Adding the variable TYPE (X[2]) to the model significantly increased $R[2]$ to 0.860257 ($F = 43.64$, $p = .0001$). Further, LANP * TYPE (X[1] X[2]) also accounts for much of the variation in reading performance ($F = 7.00$, $p = .0136$), given that both LANP and TYPE are already in the model. These suggest that the full model (1) containing the three independent variables is a good predictor of reading ability explaining nearly 89 percent of the variation in comprehension ($R[2] = .889913$).

Fitting regression function to model (1), it can be obtained that the slope ($b = .7849$) of the unfamiliar text type (X[2] = 1) is greater than that ($b = .5072$) of the familiar text type (X[2] = 0). The difference in the regression function for the two text types means that as the language proficiency increases,

reading performance on unfamiliar text improves more than that on familiar text. In other words, when text is difficult (or unfamiliar), contributions of linguistic knowledge to comprehension are greater than when text is easier (e.g., familiar).

Table 2
Comparison of three regression models

<u>Model</u>	<u>F</u>	<u>PR.F</u>	<u>R 2 </u>	<u>Root MSE</u>
LANP	58.28	.0001	.675473	2.799453
LANP TYPE	83.11	.0001	.860257	1.870722
LANP TYPE				
LANP*TYPE	70.06	.0001	.889913	1.692030

The above findings have important implications for ESL reading educators. This study demonstrates that both linguistic knowledge (as is manifested in the mastery of grammar) and prior knowledge (as is manifested in text familiarity) contribute significantly to reading comprehension, which affirms the traditional notion that comprehending texts requires complex processes involving essentially two kinds of knowledge — prior knowledge and linguistic knowledge (Cox, Shanahan and Sulzby, 1990; Hammadou, 1991; Langer, 1993). It follows that, as Yule (1986) and Spiegel (1992) have argued, an integrative approach to reading instruction is necessary — one that not only provides learners with cultural information and expectation-creating background knowledge — but fosters their linguistic competence as well. More importantly, this study reveals the relationship between language proficiency level and familiarity with text. That is, when reading unfamiliar texts, language proficiency is a more important contributor to comprehension than test familiarity. The critical role of language competency in reading performance is also noted

in some earlier studies (Berman, 1984; Clarke, 1980; Hammadou, 1991; Perfetti, 1986; Perfetti and Lesgold, 1979; Phillips, 1990). Cognitive explanations for this are that low language ability readers need to spend a lot of effort on lexical processing and propositional encoding, whereas high language ability readers can focus on text modeling because of verbal efficiency (Perfetti, 1985; 1989). This suggests that an instructional emphasis could be placed on cultivating the learner's language ability.

Table 3
Sequential sum of square

<u>Source</u>	<u>DF</u>	<u>Type 1 SS</u>	<u>F</u>	<u>PR.F</u>
LANP	1	456.7324143	159.53	.0001
TYPE/LANP	1	124.9449990	43.64	.0001
LANP*TYPE				
LANP TYPE	1	20.0521917	7.00	.0136

The goal of instruction is, according to Greenfield (1984), to enable the learner to do what formerly could be done only in collaboration with the teacher. In the second language context, rather than trying to impart volumes of background knowledge, instruction should perhaps focus more on fostering general, productive abilities such as linguistic ability that will ultimately facilitate learning through life and in variable settings (Resnick, 1989). Given that most ESL readers are language learners (Higgs and Adams, 1980), that there is a growing need to process unfamiliar information in this information age (Gayle, 1992), and that most reading takes place outside the school classroom where no teachers are available to help activate the learners' schemata, it appears appropriate for ESL teachers and researchers to work towards an integrative

approach that combines holistic and analytic interpretations of text with an emphasis on the latter (Yule, 1986). It is true that activating the right formal schemata will not necessarily guarantee success in comprehension if the right prior knowledge is lacking. However, as McCarthy (1991) noted, if a teacher's job becomes one of supplying the appropriate content schemata for a possibly vast number of textual encounters, then that teacher is out of the world of discourse and firmly in the realm of the teaching of culture, and is not necessarily teaching the learner any skill that will subsequently be productive. An integrative approach with an emphasis on fostering the learner's linguistic ability can, on the one hand, help ESL teachers truly accomplish "gradual release of responsibility" (Pearson and Fielding, 1991), or "gradual diminished assistance" (Pearson, Roehler, Dole, and Duffy, 1992) in instruction and, on the other hand, help ESL learners shift from "other-directed" or "self-directed" stages of understanding text (Vygotsky, 1978). In so doing, teachers can help their learners become "learners" rather than "knowers" (Gayle, 1992). In sum, this integrative approach should enable teachers to help every learner reach full literacy potential (Spiegel, 1992) and, in the end, enable — to borrow from Wardhaugh (1969) — "future generations both to read more proficiently and enjoyably and to use their language in its full vigor and richness" (p. 150).

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