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A Case Study: An Investigation on Influences Affecting the Reading Levels of Bilingual Students

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A Case Study: An Investigation on Influences
Affecting the Reading Levels of
Bilingual Students

THESIS

Submitted to the Graduate Committee of the
Department of Education and Human Development
State University of New York
College at Brockport
in Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Education

by

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CHAPTER I

PURPOSE

The purpose of this study is to investigate any influences on the reading abilities of Hispanic students that would hinder their assimilation and accommodation of the target language, English. The research will involve four students from the lower half of the reading comprehension portion of the Pupil Evaluation Program Test and four from the upper half (scores above goal). All eight students are from Monroe Middle School in Rochester, New York.

My investigation allows personal interviews with the eight students to determine whether there are any differences among the influences that affect the two groups in the area of the affective domain. After the students are interviewed the findings are reported to a teacher who works directly with the students and also to the director of the Bilingual Program, Mr. Edgar Miranda. The interviewer will then give them opportunity to comment on his findings and make any suggestions, if necessary.

NEED FOR THE STUDY

Catherine E. Snow makes this observation:

The most basic expectation for children attending

school is that they will learn to read and write. Sadly, this expectation is not always fulfilled for schoolchildren in the United States, far too many of whom fail at the basic school task of literacy acquisition. Although few children leave American elementary schools completely unable to read, an alarming proportion enter and ultimately graduate from high school with the ability to read at only a late elementary level (1).

In the Hispanic community there are many questions concerning the future of the children because of the negative results that are being experienced in educational systems across the nation. In Monroe Middle School such results are evident. Of the one hundred and nine students in the Bilingual Program, from which the eight students were selected, forty-seven are Hispanic. Of these forty-seven, only seven are showing scores on the reading test that are above goals set by the State. As the interviewed teacher mentioned, "There needs to be a push for literacy skills, because the kids that you mentioned (the Hispanic students that failed the reading test) are reading at a fourth-grade level in comparison with kids from Penfield, Pittsford and Webster (suburban schools in the area). These students are in the lower end of the stick and are having immense problems in their social studies classes.

They cannot absorb that expository reading. How do you develop essays when you do not have the skills?"

To better understand the condition of a student, New York State mandates the administration of the Pupil Evaluation Test (PEP) to students in the third and sixth grades in reading and mathematics and in the fifth grade in the area of writing. New York State uses these tests to determine whether or not there is a need for remediation. In Bilingual Education these examinations are the guidelines for mainstreaming students that are in the transitional program. Only students who have been in this course of study for more than twenty months are allowed to take the PEP test. The reading test is only offered in English.

DEFINITION OF TERMS

Bilingual Education:

Francesco Cordasco defines this term, "Bilingual education is instruction in two languages and the use of those two languages as mediums of instruction for any part of or all of the school curriculum" (70).

According to the New York State Education Department the program is a transitional program of instruction that focuses on the English as a second language component with

ultimate goals of mainstreaming the student when ready.

Limited English Proficient:

LEP is defined by the State Education Department Regulations Part 154.2a in this manner:

A pupil with limited English proficiency shall mean a pupil who by reason of foreign birth or ancestry, speaks a language other than English, and either understands and speaks little or no English; or scores below the statewide reference point, or its equivalent, on an English language assessment instrument approved by the commissioner.

BILINGUAL EDUCATION MODELS

Trueba defines these models for us:

Transitional: first language (L1) used as an interim instrument to incorporate students in regular classrooms.

Monoliterate Bilingualism: oral development of L1, Reading and subject matter instruction in L2.

Partial Bilingualism: reading and subject matter in L1 and L2, with bias for L2 in subjects other than culture.

Full Bilingualism: reading/subject matter in L1 and L2 (59).

LIMITATIONS OF STUDY

The results of this study must be viewed as experimental because the samples cannot be assumed to accurately portray all twelve-year-old Hispanics in the Rochester Bilingual System. Since we are dealing with subjective information and a limited number of students, we cannot overlook areas that might be misleading, especially unavailable information that could alter the results.

In short, this is a case study designed as a pilot effort to generate suggestions for future investigations.

METHOD

Subjects: A total of eight students were chosen from the Bilingual Program at Monroe Middle School. All eight students were born in the United States. All have Hispanic parents and all have been in the program for at least three years. The interviewer had no prior knowledge of these students, their background or their habits. All eight were chosen from the most current PCT/PEP reports provided by the school. After the students were interviewed, the parents were then questioned. Noteworthy

data was then shared with the language teacher of the students and also with the director of the Bilingual Program, Edgar Miranda.

Instrument: An interview schedule was developed to elicit information concerning the effects which the following factors have on reading: culture, language preference, bilingual types, support for language maintenance, attitudes toward language, peers and school.

Questions were used to prompt students into sharing information that applied to this study. If the students were uncooperative, then a more specific line of questioning followed, for example:

"Maria, describe the use of Spanish and English in your home."

If the response was uninformative, the question was re-formulated as follows:

"At home, when your mother speaks to you in Spanish, is it ALL OF THE TIME, MOST OF THE TIME, SOME OF THE TIME, or NEVER?"

The parents were asked similar questions that paralleled those of the students and overlapped some of their answers.

Procedure: The interview was administered in the language

preference of the student and parent. All conversations were taped and were later written out for analysis.

Not all of the information collected was reported: only the data that could be viewed as relevant or provocative was considered.

Reporting: The students' names were kept anonymous, and letters were used instead. Below are the students in order of their PEP scores, highest being first. Also, they are divided into two groups, group number one (those who have scores at or above the State-expected raw score) and group number two (those who have scores below the State expectations).

Group Number One:

A - 75

B - 65

C - 62

D - 62

Group Number Two:

E - 52

F - 48

G - 46

H - 43

CHAPTER II

ANAYSIS OF DATA

Reading Practices

According to John Shefelbine, "Junior high students who are good readers read a great deal outside of school. They read well not just because they have been taught well and have completed their assignments but also because they read often, on their own, and for pleasure" (6).

When the eight students were asked to describe their reading habits, all acknowledged having spent time reading outside of the school. Student H, having the lowest score on the PEP test (43) could not give a time frame or schedule of reading times and also could not give any specific reading material. When prompted to tell what he specifically read he responded with "Everything". In fact, of the four students that had failed to score above the State- determined raw score on the PEP test only one could give reading time and material read.

On the contrary, student A who scored the highest on the test (75), went into detail about what she had read and how much time she had allowed herself every week to read. Of the four students with passing grades on the test, only one responded with no real time allotment or

materials chosen.

Shelfinbine commented on the impact of good reading habits, "Let's face it: There are enormous differences in how much students read. According to one estimate, some read over 10 million words a year while others read as few as 100,000 words. That means that some students 'practice' reading over a hundred times more than others, year after year" (6).

With the Hispanic student and the selection of reading material we come upon the choice of language in that material. This is an important focus because it illustrates one of the concerns mentioned by three of the eight parents interviewed. They were concerned about the lack of Spanish books that would be enjoyable to their children. When the students were asked how often they read in Spanish, student F with the third lowest score (48) responded with "sometimes", and student G with the second lowest score (46) responded with "all the time". Student A, the top student, responded with "most of the time" when asked about reading in Spanish. By reading her Spanish Bible regularly, she has increased her proficiency with the language. The other students in the top four scores preferred reading in English. There still seem to be prejudices against students reading in their own language.

James Crawford states that:

The results of virtually every bilingual program evaluated during the past fifty years show either no relationship or a negative relationship between amount of school exposure to the majority language and academic achievement in that language. In opposition, Cummins advances a hypothesis of *common underlying proficiency*: that skills in different languages inhabit the same part of the brain, reinforcing each other at the base, while differing at the surface. Cummins's *interdependence hypothesis* predicts that a child who has mastered the basics of reading and thinking in the first language will perform well on entering a second-language environment (105-106).

Encouragement by the parents in developing reading habits plays a big role in whether or not the students develop these habits. The parents were asked: "How do you encourage your son or daughter to read in English/Spanish?" Of the students with the four failing scores, three of the four parents said little or no encouraging words to their children. The children with the passing scores had parents that were more supportive. Not only did they vocally encourage them, but two of the four parents did activities with their children related to reading.

According to conclusions drawn by Topping and Wolfindale:

Parental involvement in children's reading can therefore be regarded as a vehicle for the realization of a number of aims to do with children's learning in particular, and with home-school relations in general.

Among the former we can list:

(i) acquisition of reading skills from beginning reading to higher-order literacy skills;

(ii) familiarity with and enjoyment of reading for information and meaning;

(iii) fostering learning skills and applying enquiry and search strategies in home and school settings;

(iv) preparation for adult competence in these areas in a society which is increasingly using information technology - communication competence must remain a prime goal (12).

When the parents were asked whether they read to their children, what they read, and how often they read, various parents responded in different ways:

The parents of student A: "We definitely spend time reading to our children. We also would ask them questions about the reading."

The parents of student B: "Yes I used to read to him

often when he was younger."

The parents of student C: "I didn't but my wife did some when he was younger."

The parents of student D: "My wife is an avid reader and she would routinely read to them and still reads to them today."

The parents of the second group of students responded with: "No", "Not often", "When I was in Puerto Rico", "Yes."

When the parents were asked whether or not they were read to when they were younger, three of the four parents of the students A-D (higher scores) responded positively. In contrast, none of the parents of the students E-H (lower scores) responded affirmatively. There seems to be a pattern between parents who were read to and parents who read to their children.

Topping and Wolfendale address the issue of parental modelling in the home:

Modelling is the demonstration of a behavior by one person and the copying of it by another (consciously or otherwise). Many children want to 'be like' grown-ups, particularly the most significant grown-ups in their life, their parents. The modelling is likely to be more powerful the more the child feels emotionally involved with, and wants to be like, the

model. The enthusiasm for and interest in reading that the parents express is likely to be crucial in developing the child's motivation, via the modelling process (24-25).

In order to bring more light into the reading abilities of the Hispanic adult, we can peruse Duran's chart in Appendix A, Table 1:

Spanish language literacy, ranging from well to poor, is reported by 91% of the total sample. The Cubans report the highest percentage of those able to read Spanish well (75%), as contrasted to the 52% of Puerto Ricans and 46% of the Mexicans. It is interesting to note that 16% of the Puerto Ricans indicate no Spanish language reading ability. This is the highest percentage of Spanish language illiteracy for all three groups" (201-202).

When the parents of the first group (A-D) were asked about their reading habits they responded:

"My wife enjoys reading books and that encourages my children to read. I also read technical journals, and I bring them home for my son to read."

"My wife enjoys reading Spanish novels, and I read technical journals and business magazines."

"I'm in a nursing program so I'm constantly reading/studying my medical books."

"I like to read magazines, the newspaper [English] and my Bible on a regular basis and so does my wife."

Of the parents of the second group (E-H) responses included "no real interest in reading" to reading "magazines", but no specific material was mentioned.

The data presented by Duran in Appendix 1, Table 2 enables us to see book reading profiles of the Hispanic group he sampled. Since all of the students interviewed in this study are Puerto Ricans, it is interesting to note from this chart that they have the weakest reading habits in regard to number of books read among the three ethnic groups which are compared.

The possibility of illiteracy, and not just a dislike of reading or laziness, in the second group of parents, could reflect on the lack of reading habits. This creates tremendous problems if one were to agree that modelling is an important tool for the development of good reading habits in children. How does a parent encourage a child if he or she lacks this basic skill? It appears that modelling is crucial in the child's motivation to want to read. If we want to see better reading scores we have to start in the home.

Also, reading in Spanish as a form of language maintenance needs to be accelerated. We especially need culturally-lined material to encourage multiculturalism as

a building block and not a wall, and in turn to encourage more reading. As Guadalupe Valdes-Fallis points out:

Hispanic minorities, in particular Chicanos and Puerto Ricans, have much to gain from reading Spanish language masterpieces in their original form. Within this literature can be found not only the traditional ideas, aspirations, and beliefs of the Hispanic world but also the stylistic excellence and genius of its people (86).

ANALYSIS OF DATA

Program Misconceptions

In the book Hispanics in the United States, Pastora San Juan Cafferty and William McCready address this issue:

Most bilingual education programs in the United States have as their goal the teaching of English to non-English speakers (Llanes, 1981; Gaarder, 1977; Epstein, 1977; Paulston, 1978). This goal has followed from the major federal legislation that has brought bilingual education into existence. Most bilingual educational programs are transitional. The major issue is how best to transform the non-English speaker into an English speaker without having the person fall behind in school, get frustrated in school, and/or drop out of school (121).

The students surveyed are in a bilingual program labeled 'transitional' which is defined by the Guidelines of the State Education Department of New York as "...a program of instruction for LEP students designed to help such students acquire proficiency in English while learning the subject areas in English and in the native language" (11). Having in mind that the goal for New York State is the acquiring of English, the interviewer

asked the parents the following question: "Why do you think it is important for your son or daughter to be in the bilingual program?"

Student A: "My daughter needs to learn Spanish."

Student B: "My children are in the program so that they can learn Spanish; English can be learned in the streets. I want my other two children in the bilingual program but they are not eligible because they don't know enough Spanish."

Student C: "The only good program is the bilingual program because it is a good opportunity for our kids to learn our [Spanish] language. It is very important to me for my kid to learn my language."

Student D: "They need to understand the culture and that their bilingualism grows."

Student E: "I think it is important to learn two languages but I think that they should drop the bilingual program. I don't understand why they teach my kids Spanish when they need to learn English."

Student F: "Sure it is important! There is a need to learn two languages" (emphasis on the Spanish portion); "My daughter needs more work on her Spanish."

Student G: "Knowing the two languages helps in finding work. But there is a need to improve the Spanish portion. My son still has difficulty pronouncing the words in

Spanish."

Student H: " My child is in the program because in the future there will be more Hispanics and a need for bilingual people to help them."

It is important to note that of the eight parents surveyed, only one displayed an opinion that paralleled the goal of the State of New York: only one parent said that the reason for their child to be in the bilingual program is for that child to learn English. Overall, these parents are not concerned that their children learn English, but that they learn Spanish. They are treating this transitional model as if it were an immersion or a maintenance one.

Henry T. Trueba states that:

Within maintenance programs, the child's L1 or home language and L2 are used regularly with approximately equal emphasis as mediums of instruction for subject matter. *The long-range purpose of such programs is to ensure the continuation and development of the child's linguistic skills in L1...* (italics mine) (56).

When it is reported to these parents that their son or daughter is doing poorly on English reading tests, it appears that the level of concern would not be as high because of the priorities that are placed on the program by the parents: to teach their children Spanish, not

English. The motivation to expand the vocabulary level in the English language could be inhibited by this emphasis of the parents.

The children echoed the same concern about Spanish. When asked which language they struggled with most, seven of the eight said Spanish, not English. Six of the eight students expressed difficulty with the Spanish grammar, and one of the eight with listening and hearing the language. Only one of the eight students stated that he had difficulty when reading English even though only half of the students reached the desired levels for reading that are set by the government. It seems that for the majority of the students and the parents, the function of the bilingual program is to teach and develop the Spanish language. The progresses made toward the acquisition of the English are just a by-product and not a goal.

ANALYSIS OF DATA

Culture and Resistance

Kathryn Au points out that, "Cultural identity and resistance to school are additional concepts used to explain schools' failure to help students of diverse backgrounds succeed in school" (12).

At the onset of this paper, the interviewer had strong opinions regarding the effects of cultural identity and the inability of the teachers to understand students of diverse backgrounds. Several of the leading questions that were asked of the students dealt with this same topic. The questions were asked with the intention of identifying problem areas that could inhibit the students' ability to communicate with their instructor. The students were prompted to share their relationships with their teachers and whether they felt that the teachers understood them as Hispanics.

I was surprised to find that all of the students felt that they had a good working relationship with their teachers. The responses varied little:

Student A: "I have a good relationship with my teachers. I get along well with them."

Student B: "Good. I have a good relationship."

Student C: "My teachers are friendly."

These were typical responses for all eight students.

When the conversation turned to understanding the Hispanic culture, two of the eight expressed concerns:

Student B: "They [teachers] do not understand the culture."

Student C: "There are some. They [teachers] lack respect for what an Hispanic can do [accomplish]."

Both students were in the first group that had scores above the accepted goal, so to use this as a possible influence on the reading scores was not appropriate.

Although no real negative responses were recorded, it is interesting to note that the students who did well on the test were those who had become familiar with materials written in English (three of the four students in the first group preferred to read in English). The second group had stronger ties to the Spanish culture with a preference for reading in Spanish, as well as a higher percentage of the Spanish language being spoken at home.

As Chester Christian observes:

A pattern of culture as well as of language is implicit in whatever material is used for the teaching of reading, and materials in English represent some of the facets of the dominant culture most contradictory to traditional Hispanic values (360).

It would be helpful, as was mentioned in the section on reading, to minimize any possible cultural contradictions by providing books that would stimulate the cultural patterns of those students.

ANALYSIS OF DATA

The Family Unit

William Bennett, former U.S. Secretary of Education, describes a basic issue affecting our school system:

There is a problem with the American family - the traditional, so-called nuclear family. The problem lies with the diminishment of the family, for the biological, psychological, and educational well-being of our children depends on the well-being of families. As Michael Novak has written, the family is the original and most effective Department of Health, Education, and Welfare....Take one of the parents permanently out of the home, and the educational health of the child is likely to suffer. Children from single-parent homes are more likely to have lower grades, more likely to be discipline problems in the classroom, more likely to skip school, etc (63).

It is interesting to point out that three of the four students in the first group (those with scores above goal) had what is called a "traditional family unit" (both parents at home). Also all four students had at least one working parent. This is in contrast with the majority of Hispanics who often display a variety of social and

economic problems. Angela Carrasquillo investigates this situation:

Hispanics are a population in need of financial resources. They suffer from a variety of economic and social problems such as unemployment, underemployment, poor housing, inadequate health care,...about 26 percent or 1.2 million Hispanic families were living below the poverty level compared with 10 percent of non-Hispanic families. With large families, low incomes, and a high proportion of single-parent families, the success of a significant proportion of Hispanic children and youth is at risk (15).

In the second group of students (those below goal), all four belonged to single mothers and three of the four were non-working mothers. According to a study titled Children and Family Breakdown published by the World Health Organization:

The short-term effect of family breakdown on children is well documented and, as might be expected, the children's ages are important in determining how the separation will affect them. Even an unborn child is at greater risk since its health depends on that of its mother. During puberty and adolescence children feel intense pain, along with anger at their parents for having let them down at such a crucial point in

their lives (5-6).

It should not be implied that single mothers are not good parents or that they do not have the ability to raise their children, but the interviewer is concerned that societal pressures are great and there is a need to better understand their plight for their sake and for the sake of their children.

ANALYSIS OF DATA

Language Use at Home

The students were asked to describe their language patterns or the percent that each language (English/Spanish) was used at home. The students were asked the questions listed below with responses ranging from NEVER, HARDLY EVER, SOME OF THE TIME, MOST OF THE TIME, ALL OF THE TIME.

When asked about the amount each language was used at home, three of the four students in the first group responded with SOME OF THE TIME English and SOME OF THE TIME Spanish (50/50).

In the second group, three of the four students responded with MOST OF THE TIME Spanish and one said it was half English and half Spanish.

When interviewing the parents, all four parents in the first group (students with scores higher than the goal) indicated a desire to maintain both languages in the home and purposefully used both with the intention of helping their children in the development of both languages.

The parents of the second group were not as helpful. One of the four students said that his mother used "Spanglish" ALL OF THE TIME. Another one said that her

mother used Spanish MOST OF THE TIME (80/90%) and the last two said that their mothers used Spanish ALL OF THE TIME. It is noteworthy that although they specified Spanish as the dominant language, it was not a pure Spanish but a mixture of both Spanish and English with Spanish being dominant.

One question dealt with the amount of code-mixing (Spanglish) that occurred in the home. Ronald Wardhough offers the following explanation, "Conversational code-mixing involves the deliberate mixing of two languages without an associated topic change. Pfaff (1979) provides the following examples of conversational code-mixing among Spanish-English bilinguals:

'No van a bring it up in the morning.'

(They are not going to bring it up in the morning.)

'Estaba training para pelear.'

(He was training to fight)" (104)

All four parents of the first group were quite adamant about the avoidance of code-mixing in the home:

Student A: "We try not to mix our languages."

Student C: "When my children speak in English (at home) it is English and when they speak in Spanish it is Spanish."

The interviewer did not note any code-mixing during the meetings with the first group, however the second group

continually mixed their languages, especially as the interview progressed and they felt more relaxed in the conversation.

It cannot be assumed that conversational code-mixing is harmful. In fact, Ronald Wardhaugh states:

Conversational code-mixing is not just a haphazard mixing of two languages brought about by laziness or ignorance or some combination of these. Rather, it requires conversants to have a sophisticated knowledge of both languages and to be acutely aware of community norms (104).

We recognize that it requires a working knowledge of both languages to code-mix, but does it help in the development of each language as a whole and does it help or hinder in the language development of the students who were interviewed?

On a personal note I have seen a similar occurrence with my own children and their reading abilities. I have five children that are attending Webster Christian School. All five children have had the same kindergarten teacher and were under the same program. My first three went through the curriculum without any difficulty. My last two (Maria-age 8, Stephen-age 6) have experienced problems in vocabulary skills. Their teacher was concerned, and a progress report done by Webster Central Schools on speech,

language and hearing showed deficiencies in their response to selected questions for their age group. In other words, they lacked the necessary vocabulary to adequately respond. Maria's cognitive ability to do the work was obvious: in the second grade she is at the top of her class in one of the most demanding curriculums in Monroe County. Stephen, my youngest, is experiencing the same problems this year as were evident in Maria when she was in Kindergarten. The difference between these two groups, Maria and Stephen vs. my three oldest, was that my three oldest children had their mother at home, and she would speak to them only in English prior to their first school year. Maria and Stephen were largely cared for by my mother, due to my wife's move to work outside the home. My mother's L1 is Spanish and she speaks broken English. When she would speak to my children, it was always a form of "Spanglish" or conversational code-mixing.

To conclude that Maria and Stephen's exposure to conversational code-mixing was the root of their vocabulary problems is difficult to prove. But it is interesting to note the similarities between their experiences in regard to exposure to "Spanglish" and those of the selected students in the second group (those under goal).

CHAPTER III

DATA REVIEW

Interview With the Language Teacher

The collected information was shared with a language teacher in Monroe Middle School. She has worked with these students directly and was willing to comment on the findings. The interviewer will be referred to as MR.AVILA and to the language teacher as TEACHER.

MR. AVILA: "Seven of the eight parents interviewed mentioned that their children are in the program to learn Spanish and not English."

TEACHER: "That is interesting, I've never really talked a lot to parents about the reasons for placing them (students) in the Bilingual Program. But I do remember that last year we had problems with a kid who really didn't speak any Spanish at all, so technically he shouldn't have been in a Bilingual Program. She [his mother] just wanted him there to be with the Hispanic people. Your findings are interesting. Also, I think that what the parents are saying by wanting them in the Bilingual Program is that they want them to learn how to read and write in Spanish and not just speak it. Also

there is no question that racial problems contribute [to the large enrollment of Hispanics in the Bilingual Program].

MR. AVILA: "I noticed that code-mixing is heavier with both parents and children in the second group. Do you think that this creates a problem for the students' ability to develop good syntax and structure in English?"

TEACHER: "I have in my mind right now a picture of students, a good percentage of kids who come to the Bilingual Program and know how to speak Spanish but the Spanish never sounds good, it never sounds literate, educated. Also, their literacy skills in both English and Spanish are low. After five years of working in the program I can see a group of kids that really fall into that category and can't come out of that (code-mixing) pattern. I believe that a part of this develops from the lack of reading by the parents to the kids. The kids that you interviewed and who failed the PEP test fall into that category."

MR. AVILA: "When I asked the parents if they read to their children, the parents in the second group responded negatively."

TEACHER: "Yes that is true. You know what I do a lot, and the kids really love it, is to read to my students. I read to them outloud. The kids with better skills become impatient because they want to do the reading, but the kids with lower skills really like being read to."

MR. AVILA: "Another point that I found is that three out of four students in the passing group belonged to a traditional home setting, both parents at home, while the second group consisted of only single mothers. All the students in the first group have working parents while those in the second have parents on welfare."

TEACHER: "Isn't that interesting. In fact, one of those students that failed the test lost a parent to AIDS. Its unfortunate. Its unfortunate because student E is a bright kid, she is so eager and wants to do well."

MR. AVILA: "What kind of support can be given to the single mothers to help them support a better reading environment for their children?"

TEACHER: "Well, there could be, for example, a group, an informal one, of mothers meeting together with a teacher

and picking out books and talking about reading to the kids. Now, I would say it would have to be done at an elementary level, since that is a level where parents might feel comfortable reading outloud. I know that the parents do read, they know how to read [the parents of the second group]. At an elementary level it would work by having teachers modeling how to read to their kids. There needs to be workshops that demonstrate ways that parents can assist their children with their school work, starting at an early age and reading to them, once a night, and reading to them before they go to bed. This would make the children feel secure and give them a love of books because they are doing it for pleasure and because they are close to a parent. It is indelible, it helps to build on syntax, structure and vocabulary at an early age."

MR. AVILA: "When I asked the students in the second group which language they preferred to read in, two of the four said in Spanish."

TEACHER: "That is interesting. That is interesting."

MR. AVILA: "The greatest drawback to reading in Spanish is the lack of books."

TEACHER: "Oh, that is true, so true. The materials have to be there and there has to be an understanding on the part of the staff and commitment on the part of the staff. There really, with this lump of kids that we have talked about, there has to be a push for literacy skills, because the kids that you mentioned [the second group] are reading at a fourth grade level in comparison with kids from Penfield, Pittsford and Webster. These students are in the lower end of the stick and are having immense problems in their social studies classes. They cannot absorb that expository reading. How do you develop essays when you do not have the skills?"

DATA REVIEW

Interview With Mr. Miranda

Mr. Miranda is the director of the Bilingual Program in the Rochester City School District, the district in which Monroe Middle School is located. He has consented to review the information collected from the interviews and comment on the findings. The following is the conversation with Mr. Miranda. Only the most noteworthy information from the conversation has been included.

MR. AVILA: "Mr. Miranda, I have just finished an investigation into the factors that influence the reading scores of the Hispanic population in Monroe Middle School. It was surprising to note that of the 109 students, forty-seven are Hispanic, of which only seven have passed the PEP test in reading."

MR. MIRANDA: "Are those LEP students? [yes]. Well, I am not surprised. We have a lot of folks who would like to exclude LEP students from taking the PEP test because they say, with a high percentage of these students, it brings down the score and makes your school look bad. That is true to a certain extent but the answer is not to put the

blame on the student. If the student is identified as LEP by definition and because of his level of proficiency, you cannot expect him to do well on an English reading test."

MR. AVILA: "I noticed from the interviews that the children with the better reading habits were the ones that did well in the PEP test."

MR. MIRANDA: "That is right. You do not become a better reader by not reading. You become a better reader by reading. The other thing that I would bet on is that the four students that did well on the PEP test probably have strong skills in Spanish. Research has demonstrated that there is a positive correlation between skills of the first language and the acquisition of the second."

MR. AVILA: "Regarding the reading habits and language preference of the students in the first group, it is interesting to note that only the top student preferred reading in Spanish. Of those in the second group, two of the four students chose to read predominantly in Spanish. Of that group, three of the four complained that the lack of reading material in Spanish was a cause for their lack of reading."

MR. MIRANDA: "That is an important point. If you want your students to read, you have to give them something that is worth sitting down and going through. The lack of materials has been unfortunate. Materials are available, the problem is finding the money to finance it. In order to turn the corner on this, we are going to have to get the district to make a major investment to build up the library in the school and to build some of those classroom libraries. The books are there. There are tons of materials that could be brought in. We just have to be willing to spend the money.

MR. AVILA: "A major difference between the two groups was the encouragement to read given by the parents in the first group and the total lack of encouragement of the second group."

MR. MIRANDA: "That is a significant point, but it is a given that everything starts at home. I was in a meeting at East High School dealing with a new program of bringing in a college adviser for the students that were in the Bilingual Program. Again, one of the concerns was that there are a lot of parents who quite clearly state that they would be satisfied just if their son or daughter passed high school - nothing beyond high school. Also, I

have parents in first and second grade who have basically given up on the children. The students who do well are students who have parents who teach them that education is a value, and the ones who are struggling are the ones who have parents who never show up for meetings."

MR. AVILA: "I mentioned that the traditional family has a better support system because of the two parents encouraging their kids and each other. What about the single mothers, those in the second group? How can they be helped in encouraging their children to read and being a model as well?"

MR. MIRANDA: "We have organizations like "Big Brother" that try to provide some of that support, and certainly [to provide] for the young male who needs to have a positive role model, regardless of how wonderful the mom might be. Perhaps some of the schools could try to give support in getting some of these positives to work. Also, other community agencies need to get involved to support these single mothers because they are being overworked. To encourage the students to read more, we are trying to get away from what is called the traditional periods, where you have forty minutes and then you switch to the next topic. We want to implement what is called 'Block

Scheduling', in which you would find a sustained period of reading set aside. During this time everybody would read, including the teacher. Also, we find that there needs to be more reading time, in which the teacher reads to the students, including the older students. Reading to students helps to develop a positive experience."

MR. AVILA: "When I asked the parents of the students why they placed their children in the Bilingual Program, seven out of eight said it was because they wanted their children to learn Spanish, not English. This could explain their lack of concern about the PEP test."

MR. MIRANDA: "I know that part of the burden that we have is to educate the parents on the purpose of this program. There is still a lot of work to be done. One of the things that we are trying to do is change the model from a transitional to a two-way system, and then your goal is not for the student to learn Spanish or English, but to become proficient in both languages."

CHAPTER IV

CONCLUSION

As a result of this research and interviewing process it is concluded that the findings have implications that warrant the consideration of educators and suggest areas requiring further study by researchers. The following four areas are important concerns.

- 1) There is a misunderstanding by the parents on the function of the present Bilingual Program. The parents view the system as a maintenance model, while the system is in truth a transitional one.
- 2) There are concerns regarding language development due to the extensive use of code-mixing in the home.
- 3) There are concerns regarding the lack of proper parental modelling and instruction in the area of reading.
- 4) The lack of adequate reading material in Spanish needs to be investigated and rectified.

Miscommunication between the families and the school system was evident as we examined the reasons the students were placed in the program. The goals and objectives that encompass the transitional system of this school are contrary to the desires of the parents. Interesting to note is the strong desire by the parents to maintain their language and culture in their children. It is a shame

that the model in which the students participate is a transitional one with goals of mainstreaming. I find it incredible that we, as a nation, can pour money into foreign language programs that produce graduates that achieve lower levels of oral proficiency in that language than a six-year-old native speaker of the language. Here in this Transitional Bilingual Program are a group of students that already speak at a higher level of proficiency than most foreign language students in high school programs, and yet the goal is to move them into an all English environment as soon as possible. Instead of mainstreaming the Hispanic students into an all-English classroom, we should allow monolingual students in English the exposure to an all-Spanish environment and the opportunity to experience multicultural tones.

As was mentioned in chapter one under limitations, areas that might be misleading in this investigation include the size of the sample (only eight students), and the socioeconomic base which, in this study, is shown by the dissimilarities in family structure and income when comparing the homes of the two groups of students. In developing suggestions for further research, it would be advisable to increase the size of the sample to better represent the population, and to work with a group that had likenesses in its socioeconomic structure. One

possible path could be to work with students who are currently involved in the Bag Lunch Program, created for economically depressed families. This would help in the selection processes when choosing students from the same economic base. Reducing these limitations will help in additional investigations of *code-mixing*, as a hindrance to reading, and parental modelling. Code-mixing is of special interest because it was only noticeable in the second group of students, where three of the four had lower income structures.

Modelling needs to be investigated and reviewed as a positive means of encouraging better reading habits. It is not enough to tell the students the benefits of reading, they need to see these benefits in the lives of those they admire. There needs to be a push towards incorporating community leaders that are more closely understood and liked by the particular student groups. Also, the advantages of reading to others are being overlooked. Jane Davidson in her book, Counterpoint and Beyond, states that "the single most important activity for building the knowledge required for eventual success in reading is reading aloud to children" (19). The Language Teacher interviewed commented that even the older children appreciated when she read to them.

The lack of reading material has been confirmed by two

of the teachers that are currently involved in the program at Monroe Middle School, as well as the head of the Bilingual Program, Edgar Miranda. One teacher interviewed is presently using her own materials and money to help in this deficiency. The cost is great but the need is greater. Possible alternatives to district financing would be to incorporate outside sources like the business community or the parents themselves in helping with fund drives or auctions.

Research should be directed toward the particular reading practices of the selected groups beyond the limited findings of this report. Other questions that need to be considered are the selection of appealing reading materials, such as magazines, books and comics, and the possible outside influences on those selections, such as television, peer pressure, and the positive and negative influences of parental modelling.

This writer is frightfully concerned for the future, not just for the citizens of this country as a whole, but also for the hope of the Hispanic community in part. That hope is linked to the condition of its children and the abilities that these children will have in this fast-paced society. Without proper reading skills these children will be significantly handicapped, restricted from fully making a difference and being a difference in this high

tech world. We need to do all we can to rectify this crucial predicament for the sake of the children.

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APPENDIX A

TABLE 1

Spanish and English Language Reading Ability by Groups

Language by Group	Reading Ability				Total
	Reads Well	Reads Average	Reads Poorly	Doesn't Read	
A. Spanish					
Mexican (n=162)	46%	35	10	9	100%
Cubans (n=111)	75%	22	2	1	100%
Puerto Ricans (n=125)	52%	24	8	16	100%
All Latinos	56%	28	7	9	100%
# of Cases	222	111	29	36	398
B. English					
Mexican (n=162)	23%	19	14	44	100%
Cubans (n=111)	19%	23	16	41	100%
Puerto Ricans (n=126)	21%	31	9	39	100%
All Latinos	21%	24	13	42	100%
# of Cases	85	95	52	167	399

TABLE 2

Book Reading Activity Over Past Year by Ethnic Group

Book Reading Characteristics	Ethnic Group			All Latinos	# of Cases
	Mexican	Cuban	Puerto Rican		
A. Number of books read (a)					
None	44%	46%	54%	48%	192
1-3	18	21	16	18	72
4-9	14	12	10	12	48
10 or more	24	21	20	22	88
Total	100%	100%	100%	100%	400
B. Language of book reading (b)					
Spanish	40%	44%	47%	43%	89
English	24	25	22	24	49
Both	36	31	31	33	68
Total	100%	100%	100%	100%	206
C. Extent of paperback reading (b)					
Never	66%	63%	45%	59%	126
Once in a while	19	20	28	22	46
Often	15	17	27	19	40
Total	100%	100%	100%	100%	212
D. Percent reading fotonovelas (a)					
	47%	33%	38%	40%	149
E. Percent reading comic materials (a)					
	33%	25%	28%	29%	108

(a) Based on total sample responding to the question.

(b) Based on subsample reporting some book reading.

APPENDIX B

Grade 6

READING TEST

FOR NEW YORK STATE ELEMENTARY SCHOOLS

TUESDAY, MAY 9, 1989 – 9:15 a.m.

TO THE STUDENT

This is a test to find out how well you read. Do your best to read the passages and answer the questions. Work carefully and do not rush. You will be given as much time as you need.

DO NOT OPEN THIS TEST BOOKLET UNTIL YOU ARE TOLD TO DO SO.

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The University of the State of New York
THE STATE EDUCATION DEPARTMENT
Albany, New York 12234

DIRECTIONS

This test contains several reading passages. In each passage some words are missing. Wherever a word is missing, there is a blank line with a number on it. Next to the passage you will find the same number and five words. Choose the word that makes the best sense in the blank.

On your answer sheet, find the same number as the blank. Fill in the circle that has the same letter as the word you have chosen. Mark only one answer for each question. If you want to change an answer, be sure to erase your first mark completely. Then mark the answer you want.

Find Samples **S-1** and **S-2** on your answer sheet. Read Sample **S-1** below and see how the right answer has been marked on your answer sheet. Then read Sample **S-2** and mark the answer on your answer sheet.

SAMPLES

It was sunny and hot for days. Then the **S-1** changed. It turned cloudy and cool.

- S-1** a) price b) road
 c) job d) weather
 e) size

It isn't safe to go out today. There was too much **S-2** yesterday. Many streets are flooded with water.

- S-2** a) rain b) food
 c) mail d) noise
 e) work
-

Look at the answer for Sample **S-1**. The circle for letter d is marked because the word weather makes the best sense in the blank.

In Sample **S-2** you should have marked the circle for letter a because the word rain is the word that makes the best sense in the blank.

As you can see, you may not be sure of the answer to a question until you have read the sentences that come after the blank. So be sure to read enough to answer the questions.

You are not expected to read at the same speed as other people or to answer the same number of questions. As you work on this test you will find that the passages become harder to read. Do your best to read as many passages as you can and to answer as many questions as you can.

You will be given as much time as you need. Be sure to spend your time on what you can read rather than on what is too hard for you. It is more important to get the answers right for the passages you can read than it is to try to read all the passages on this test.

Remember, mark all your answers on the separate answer sheet, and mark only one answer for each question.



Many animals have teeth. Often, teeth help them eat. Some teeth, though, help animals in other ways.

Teeth help some animals work. Elephants have two long front teeth. These teeth are called tusks. Elephants can lift logs with their tusks. The logs are heavy. But the tusks are 1. They can lift very large logs. They can even hold several logs at once. That way, the elephant can get its work done faster. A lot of 2 is saved.

Tusks have other uses, too. A young elephant may be attacked by a lion. The mother elephant comes to the rescue. She uses her tusks like spears. She 3. The lion runs off. The young elephant is safe.

Beavers, too, use their teeth to do work. They bring down a tree by biting it. They start biting in one place. They keep biting. The tree starts to break. Soon it 4. The beaver must jump out of the way.

Beavers work fast. One beaver can cut down a small tree in minutes. But the 5 is not done then. The branches are not needed. They must be chewed off. Then the tree is ready. The beaver will use it to build a home.

Seals, too, may work with their teeth. Some seals use their teeth to cut through ice. These seals swim under ice. But they must come up to breathe. They must break through the ice. They use their teeth to drill holes. The holes make the ice crack. The seals can get to the surface. They can get 6. They can breathe.

Teeth help some animals hatch. Many frogs are born inside eggs. They must break through the shell. Then they can get out. These frogs have an egg tooth. The egg tooth is sharp. It makes a hole. The hole grows. Soon the frog can 7 the egg. The egg tooth is no longer needed. The frog soon loses it.

- 1 a) smooth b) clean
c) strong d) wet
e) short

- 2 a) time b) room
c) soil d) grass
e) rope

- 3 a) forgets b) fights
c) obeys d) sleeps
e) disappears

- 4 a) fits b) burns
c) flowers d) falls
e) recovers

- 5 a) job b) meal
c) danger d) path
e) journey

- 6 a) salt b) shelter
c) food d) water
e) air

- 7 a) hide b) find
c) shake d) leave
e) dry





The Tuareg are people of the Sahara. They are cattle herders. They must move from place to place to locate food for their herds. The Tuareg have found ways to move easily. They have also found ways to deal with the desert.

The Tuareg move often. They have few possessions. All that they own must fit on the backs of some camels and donkeys. So everything must be easy to 8. It must also be easy to carry.

There is little to build with in the desert. It would also take too long to make a new house after each move. So the Tuareg live in tents. Their time indoors is spent mainly in the front part of the tent. The back is not used for living. That 9 has a different use. Goods are stored there. The Tuareg sleep inside their tents. But they do not cook inside. There would be too much 10. The tents would get dirty.

There is little water in the desert. The Tuareg cannot count on getting enough to drink. But they can count on getting milk from their cows. The Tuareg almost never use their cows for meat. They do not want to 11 the cows. Then there would be no more milk.

The desert is hot and sandy. Bare feet would burn. They would sink into the sand. 12 would be difficult. So the Tuareg wear special sandals. They also wear special clothes. When men work outdoors, they wear veils over their faces. The veils hold in drops of water from their breath. The moisture protects their skin. Otherwise, their faces would become 13. The skin would crack and hurt.

Tuareg men often travel far. Sometimes they are gone for weeks. Then the women must seek out more food for the herds. They move to another place. When the men return, they must 14 their new homes. In the desert, that can take days.

- 8** a) see b) buy
c) defend d) pack
e) explain

- 9** a) area b) money
c) fire d) light
e) animal

- 10** a) bread b) smoke
c) wool d) shade
e) company

- 11** a) smell b) touch
c) kill d) brush
e) follow

- 12** a) Washing b) Walking
c) Throwing d) Talking
e) Quarreling

- 13** a) cold b) pale
c) serious d) dry
e) handsome

- 14** a) find b) clean
c) sell d) paint
e) share





A horse's foot has two parts. The delicate part in the middle is called the frog. A tough shield surrounds the frog. This hard piece is called a hoof.

A horse's hoof is similar to a person's fingernail. A fingernail gets longer over time. A hoof 15 in a similar manner. When a hoof gets too big, it can be trimmed. A horse feels no discomfort when its hoof is trimmed, as long as the frog is not touched. Sometimes, however, a hoof may be cut too close to the frog. This 16 the horse. The frog is very sensitive to pain.

When horses walk only on grass or soft soil, little happens to their hooves. However, not all 17 are this soft. Roads and hard paths can wear down hooves. Roads can also make a hoof crack. Sometimes the 18 is a small one. At other times, the hoof may split up to the top. Such a large crack can be very painful.

People have used many ways to try to protect horses' feet. Pads have been tied to them. The hooves have also been wrapped in cloth. 19 the feet this way did not help, though. Cloth and soft pads did not last. The best way yet found to protect a horse's feet is with iron shoes. Such shoes have been used for at least 2,000 years.

To make horseshoes, a piece of iron is placed in a furnace. When the metal gets so hot that it glows, it is hammered into a rough U-shape. The rough shoe is measured against the horse's foot to be sure it will fit. The 20 must be right. Then the shoe is hammered into final shape. Next, openings are punched through the iron. These 21 are evenly spaced. They allow nails to be driven through the shoe. Once fitted, the iron shoe keeps the hoof from splitting and wearing away.



- 15** a) rests b) grows
c) turns d) pulls
e) separates

- 16** a) cleans b) feeds
c) hurts d) frees
e) supports

- 17** a) bones b) hairs
c) beds d) voices
e) surfaces

- 18** a) break b) load
c) stick d) hill
e) farm

- 19** a) Washing b) Removing
c) Cooling d) Covering
e) Stroking

- 20** a) weight b) size
c) water d) direction
e) name

- 21** a) holes b) piles
c) posts d) tracks
e) meals



People can become frostbitten in winter. Ice crystals can form inside their body cells. Parts of their bodies can actually freeze. Frostbite happens slowly. But it must be treated quickly.

Blood flowing through the body usually keeps it warm. But cold weather makes blood vessels tighten. Less blood gets to areas like the fingers and toes. Soon there is a drop in 22. The area starts to feel very cold. The lack of blood can also be seen. The skin loses color. It turns white or gray. The area soon starts to freeze. It gets 23. It gets shiny. It no longer feels like flesh. It feels like ice.

Victims of frostbite may feel some tingling at first. The affected area may also hurt. But then numbness sets in. The 24 disappears. So the victim may think nothing is wrong. Often someone else notices the frostbite first. That is one reason people camp in groups in winter. They can 25 each other. They can also help each other.

Frostbite victims need to be warmed up at once. They should be taken indoors. But first they should be checked for frozen feet. These people should not 26. They should be carried. The affected area should be handled gently. Frozen tissue is very delicate. It should never be rubbed. Great 27 could result. The tissue could be destroyed.

The frozen area should be placed in warm water. The water should not be hot. The person would not be able to feel the heat. He or she could be 28. Soon the frozen tissue will thaw. The blood will start flowing and color will return. The area should be removed from the water at once. The person should then be taken to a hospital.



- 22** a) weight b) interest
c) travel d) variety
e) temperature

- 23** a) huge b) hard
c) bare d) flat
e) rough

- 24** a) pain b) snow
c) trail d) surface
e) patient

- 25** a) clean b) watch
c) avoid d) believe
e) introduce

- 26** a) sit b) appear
c) walk d) leave
e) observe

- 27** a) speed b) courage
c) size d) silence
e) harm

- 28** a) found b) burned
c) pulled d) delayed
e) prepared



We seldom see pure sulfur, but it is a very important mineral. The manufacture of rubber, for instance, depends on it. Raw rubber can be brittle, but with sulfur added, the rubber becomes elastic enough to use in making tires for cars, trucks, and planes. So the way we 29 depends on sulfur.

Transportation is not the only part of our economy that relies on sulfur. It is also used to make goods as different as sugar, leather, paper, and plastics. These 30 do not contain pure sulfur. But sulfuric acid, a compound of sulfur, is used in their manufacture.

The modern method of mining sulfur is named for its inventor, Herman Frasch. Most minerals are mined by digging shafts and tunnels. This is expensive. But the Frasch process involves no digging. So there are fewer 31. Less is spent on materials and labor. The process has another advantage. If miners had to go underground to dig out the sulfur, they would be exposed to poisonous gases. With the Frasch method, sulfur is extracted without anybody going below ground. This way of 32 the sulfur is safer.

The Frasch process relies on the fact that sulfur, normally a hard, shiny rock, becomes a liquid at relatively low temperatures. Workers pump superheated water down into the earth to where the sulfur lies. In this way, they 33 the sulfur. Once it is a liquid, it flows easily. It collects in a pool at the bottom of the well. Compressed air is then pumped down. As the air arrives, pressure increases on the sulfur. Soon the 34 is enormous. Under this pressure, the sulfur is pushed to the surface.

There, the sulfur is piped into vats and left to solidify. Its temperature drops as the air chills it. But this 35 takes time. When the sulfur has finally hardened, the sides of the vat are taken off. A mountain of sulfur then stands ready for market.

- 29 a) paint b) wash
c) breathe d) garden
e) travel

- 30 a) products b) rivers
c) bottles d) meals
e) countries

- 31 a) metals b) sources
c) costs d) controls
e) questions

- 32 a) mixing b) removing
c) drying d) straining
e) testing

- 33 a) bury b) weigh
c) price d) melt
e) store

- 34 a) region b) force
c) ship d) sale
e) factory

- 35 a) cooling b) searching
c) selling d) stirring
e) emptying



Experienced collectors of antique furniture are detectives as well as appreciators. By examining construction and appearance, they can determine whether a piece of furniture is authentic or fraudulent. Some forgeries are well-done. So careful 36 is necessary.

The rough, unfinished wood surfaces of a piece offer clues to its age and integrity. Collectors look, for example, at the underside of a table. A piece made prior to 1815 should be marked with the parallel grooves of a handsaw. Curved grooves would signal the use of a power-driven circular saw. This 37 came into use later. A table claimed to be from the 18th century could not have been made with one.

The color of unseen surfaces is also important. All the boards on the back of a dresser should be the same shade of brown, created by years of exposure to the same degree of light and dirt. There should be no 38. Knowledgeable collectors know that forgers can rarely find enough old wood for an entire piece, and cannot camouflage unmatched woods in unfinished areas. On exposed surfaces, forgers often use paint to cover new or unmatched parts. That is how they 39 their work. But new paint is soft and elastic; it peels off in strips when scraped. Old paint, in contrast, is very 40. As a result, it breaks off in chips or a fine powder.

Signs of wear also help prove authenticity. The front rungs of kitchen chairs will be worn where generations of shoes have scraped them. Wear must occur in natural places, however. A chair with marks inside the back rungs would be an obvious fake. That area would rarely have been 41. A piece without wear is not necessarily suspect. Some pieces were ornamental rather than functional. They were meant only to be 42. This would be true of a parlor chair but not of a tavern table. A tavern table that looks new probably is.



- 36** a) cleaning b) movement
c) study d) expression
e) development

- 37** a) machine b) bed
c) lamp d) length
e) room

- 38** a) sources b) influences
c) locks d) limits
e) differences

- 39** a) hide b) describe
c) judge d) share
e) plan

- 40** a) pure b) cheap
c) dark d) hard
e) yellow

- 41** a) chosen b) touched
c) kept d) completed
e) designed

- 42** a) delivered b) sold
c) tested d) folded
e) displayed



Since their discovery in 1722, the statues of Easter Island have fascinated and puzzled travelers. With huge heads and deep eyes, these stone sculptures may stand over 50 feet tall and weigh 80 tons. Early visitors wondered how primitive sculptors ever moved such large pieces. They wondered how the islanders stood them upright. The visitors had other 43 too. Why, for example, did the statues have shoulder-length earlobes? Why had they heads but no bodies?

Possible answers were suggested when islanders demonstrated how their ancestors might have handled the statues. They showed visiting scientists that a 12-ton statue could be pulled overland using only rope and a wooden sledge. No other 44 were necessary. By pulling on rope that was tied to a statue lying on wooden runners, the islanders were able to make the statue glide smoothly. Because of the statue's size, 180 villagers were needed for the pulling. Fewer 45 would not have been enough.

The islanders also showed how the statues might have been lifted into place. Using wooden poles as levers, they pushed up the head and wedged some stones underneath. As they continued, alternately lifting the head and wedging in stones, the statue began to tilt upward. Bit by bit, it was 46. When it stood upright, the stones underneath were no longer needed. Therefore, they were 47. Afterwards, no trace of the stones remained.

The visiting scientists also learned that the natives who had carved the statues were called Long Ears, because of their nearly shoulder-length earlobes. It seems they had the custom of piercing their ears and inserting heavy objects to weight them down. In this way, they 48 the lobes. This may explain why the statues have such long earlobes.

The scientists learned, too, that the statues originally had torsos and arms. As years passed, however, shifting sands began covering the statues. The bodies were gradually 49. Today, only their heads remain above ground.



- 43** a) diseases b) questions
c) guides d) expenses
e) hotels

- 44** a) foods b) clothes
c) trails d) shelters
e) materials

- 45** a) tents b) people
c) days d) miles
e) boats

- 46** a) painted b) examined
c) broken d) raised
e) forgotten

- 47** a) saved b) formed
c) removed d) counted
e) dried

- 48** a) stretched b) washed
c) bared d) protected
e) colored

- 49** a) turned b) cleaned
c) marked d) buried
e) hollowed



During this century, aircraft powered by human energy have become a reality. Three generations of human-powered aircraft have now demonstrated ways to overcome the difficulties of translating human energy into flight.

In the first generation of human-powered aircraft, the pilot pedaled an enclosed bicycle to build up enough speed for the winged craft to leave the ground. 50 provided the only power. The flight lasted just seconds, for the craft had no means of propulsion to keep it aloft. It also lacked any steering mechanism. The plane could not be 51. It flew only in a straight line. The total weight of the structure, which had a complex wooden framework, contributed to the brevity of its flight. Yet, individually, the slender wooden supports broke easily. The framework, therefore, was 52. Once a section broke, the entire structure was at risk.

Aircraft of the second generation were constructed with frames of hollow aluminum tubing that was light, yet resilient. External wires helped keep the structure rigid. Pilots pedaled a mechanism that rotated a large propeller. The harder the pilot pedaled, the greater the velocity of the aircraft. The craft could not accelerate beyond certain speeds, however. There were 53. For one thing, humans can pedal only so long and so hard. For another, the largest—and most efficient—propellers proved impractical. The diameter of the blades could not increase beyond a certain measurement without their striking the ground upon takeoff and landing. 54, therefore, was restricted.

The third and current generation of human-powered aircraft is the lightest and fastest. Rear-mounted propellers work more efficiently than the forward-mounted ones of the previous generation. Space-age materials have enabled designers to eliminate external wires, which created wind drag that slowed down earlier craft. Such wires are no longer 55. A special covering further decreases wind drag. However, the basic source of power is still a person. That feature has not been 56.



- 50** a) Gas b) Motors
c) Sails d) Streams
e) Legs

- 51** a) turned b) loaded
c) seen d) shared
e) tested

- 52** a) wide b) thick
c) small d) square
e) weak

- 53** a) meetings b) exercises
c) limits d) passengers
e) seats

- 54** a) Glass b) Balance
c) Size d) Expense
e) Attention

- 55** a) bent b) painted
c) lost d) needed
e) doubled

- 56** a) revealed b) examined
c) suggested d) changed
e) discovered



Avalanches are masses of snow that move down mountain-sides, often with destructive force. They occur in areas where the accumulated snow, or snowpack, undergoes internal changes that loosen its bond with the slope beneath. As a result, the snow may 57. Although approximately ninety percent of such slides are triggered by storms, their development is usually initiated by more subtle climatic factors. One aspect of 58 is especially important. Since temperature greatly affects the changes that snow undergoes on the ground, it has more ramifications in avalanche formation than any other single factor.

As soon as a snowflake hits the ground, its structure changes. Water molecules move from the ends of the crystalline branches of the flake to its more rounded center. When the temperature is slightly above the freezing point, this process proceeds at a rapid rate, causing each snow crystal to assume the form of a rounded ice grain. The branches 59. Without them, the crystals occupy less space and become more compact, causing the snow cover to settle. Thus, the snow cover 60. This shrinkage creates a strong layer of dense snow that is not prone to avalanching.

The snow cover may respond differently, however, when the air temperature falls below the freezing point. Such a 61 can create problems. The insulating property of snow keeps the ground temperature at 32 degrees Fahrenheit, the freezing point. As the air temperature decreases, water vapor rises from the warm lower layers of the snowpack to the cold upper layers. There, it freezes to form hollow, cuplike crystals that hold together poorly. Consequently, a 62 layer develops. The weight of new snow can cause the layer to collapse and fall away from the slope, whisking the snowpack down with it. Other temperature-related circumstances that increase the risk of avalanching during subsequent storms include slush, crusts of refrozen snowmelt, and pellet-like snow grains called graupel. Any of these conditions may increase the 63 significantly.

- 57** a) melt b) slip
c) build d) collect
e) continue

- 58** a) rock b) safety
c) design d) weather
e) position

- 59** a) match b) cross
c) touch d) swell
e) disappear

- 60** a) levels b) lasts
c) contracts d) shines
e) returns

- 61** a) wind b) decline
c) lack d) substance
e) division

- 62** a) weak b) full
c) pure d) thick
e) clear

- 63** a) time b) supply
c) size d) danger
e) range





Along New England's coast, tide-washed rocky surfaces are encrusted by numerous species of invertebrates and algae. Empty space is rare and encrusting organisms are frequently observed growing over one another. Periodically, "disturbances" (e.g., storm-tossed rocks or the action of predators) create free patches of rock. However, the space is soon 64 again. Scientists assume space is a limited resource for which organisms compete, and they are studying how species coexist on the same rock surface.

- 64 a) dried b) left
c) cleaned d) warmed
e) occupied

Appropriation of available surfaces depends upon both the competitive hierarchy of species at the site and the frequency of disturbances there. The competitive hierarchy expresses itself in the sequence of recolonization: early successional organisms colonize upon the rock and are subsequently replaced by competitively dominant species that persist until they are overgrown or displaced by the next disturbance. This 65 is predictable. Competition among encrusting organisms usually involves direct overgrowth where edges meet. Ordinarily, species with more massive growth forms, either thicker colonies or larger individuals, top the hierarchy. Thus, 66 confers advantage. A few species are epibionts, growing attached to other organisms but drawing sustenance from the environment, not from the host. Ordinarily, the host is not 67. When abundant, however, epibionts can effectively deprive their hosts of light and threaten their survival.

- 65 a) order b) loss
c) weather d) return
e) division

- 66 a) color b) speed
c) size d) position
e) movement

- 67 a) known b) harmed
c) seen d) prepared
e) required

- 68 a) events b) defenses
c) beaches d) materials
e) journeys

Space for early successional species is created only by physical or biological disturbances. Hence, these 68 play a critical role. The diversity of species at particular sites depends upon the frequency of disturbances there. Both extremely frequent and extremely infrequent disturbances discourage diversity. Where disturbances are infrequent, species high on the competitive hierarchy monopolize available space. Where disturbances are frequent, only early successional species and rapidly growing species persist. Nothing else can 69 itself. Hence, diversity is again low. Intermediate rates of disturbance permit the succession and coexistence of many species. Hence, 70 is maximized. At any moment, different surface segments are at different stages of recolonization, further increasing the diversity of species.

- 69 a) control b) cool
c) sun d) save
e) establish

- 70 a) weight b) safety
c) silence d) variety
e) distance





Television and news photographs frequently depict astronauts engaging in acrobatics made possible by the absence of gravity. Little is reported, however, concerning physical difficulties that astronauts experience in adapting to weightlessness. Yet, such 71 do occur. The most immediate and annoying involve the otolith, a sensory mechanism in the ear's vestibular apparatus which transmits signals critical to maintaining coordination and postural equilibrium. Ordinarily, the otolith receives stimulation from two sources: gravity stimulates it continuously while bodily movements provide intermittent stimulation. In the weightlessness of space, however, the otolith receives only the latter kind of stimulation. The former 72 is missing.

Lacking gravity's constant stimulation, the otolith transmits uncharacteristic signals to the brain, triggering a syndrome of "space sickness" whose symptoms include nausea, dizziness, tiredness, difficulty in concentrating, and generalized uneasiness. Because individuals differ in adaptability, such difficulties are not experienced by every astronaut. Most, however, are 73. In severe instances, astronauts' ability to function may be temporarily impaired. Fortunately, medication provides appreciable relief and the condition is usually temporary; symptoms gradually diminish and ordinarily cease within three days. Hence, the astronauts do not continue 74.

A potentially more serious and enduring physiological consequence of weightlessness is a decreased concentration of calcium in astronauts' bodies and an associated atrophy of bones and muscles, particularly in structures related to posture. Theoretically, such atrophy, which results from disuse, is preventable by exercising regularly during flight. In practice, however, it is difficult to 75 this. Astronauts cannot exert sufficient force on their lower extremities while weightless to prevent atrophy unless so tightly strapped onto a treadmill that agile movement is precluded.

Although calcium levels increase once gravity is reintroduced, for each 90 days of weightlessness astronauts can anticipate a permanent reduction of 0.5 percent of total body skeleton. Thus, some of the 76 is permanent. In contrast, muscle weakness experienced during flight is temporary, even though recovery of normal power and endurance is protracted. Eventually, full 77 does return.

- 71** a) sights b) problems
c) journeys d) storms
e) delays

- 72** a) type b) person
c) section d) choice
e) picture

- 73** a) affected b) dressed
c) positioned d) paid
e) selected

- 74** a) waiting b) learning
c) suffering d) serving
e) training

- 75** a) wear b) eat
c) carry d) remove
e) accomplish

- 76** a) loss b) color
c) noise d) mass
e) ice

- 77** a) heat b) taste
c) memory d) strength
e) sound

