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ABSTRACT

Project PROPEL (Program Reorganization Promoting Excellence Through Language) is a program in content area instruction for limited English speaking (LEP) high school students, developed at the International High School of LaGuardia Community College (New York). The handbook is designed to assist teachers, administrators, and policymakers attempting to reorganize their programs to serve this population. Introductory sections describe the International High School program, present its mission statement and educational philosophy, and offer general information on content-based English as a Second Language, strategies for teaching LEP students, collaborative learning, interdisciplinary study, and alternative methods of assessment for students and staff. Subsequent sections provide more detailed information on the objectives and design three programs: the Motion Program, a set of courses exploring the concept of motion from the perspectives of several disciplines, including literature, mathematics, physics, and physical education; Beginnings, a full-day interdisciplinary program stressing linguistic and cognitive development; and a personal and career development program, a 3-year experiential learning sequence incorporating linguistic skill development, multiple learning contexts, and career education. Notes for teachers and program developers and sample class activities are contained in each of these sections. Criteria for program adoption and a list of Project PROPEL publications are appended. (MSE)

Project PROPEL Handbook

Resources for Adopting Sites

PROGRAM REORGANIZATION
PROMOTING EXCELLENCE
THROUGH LANGUAGE

ACADEMIC EXCELLENCE

THE INTERNATIONAL HIGH SCHOOL

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Some of the materials used were adopted from work of the *Motion* team, David Hirschy, Alan Krull, Hector Lopez, Kathleen Rugger, and Ruthellyn Weiner; the *Beginnings* team, Simon Cohen, Anthony DeFazio, Charles Glassman, and Allison McCluer; and career education teachers Nancy Dunetz, Kathy Fine, Charles Glassman, and Ronni Green. Faculty member Alice Boso was the final reader of the document. These resources were developed by the PROPEL Team, Dr. Nancy S. Dunetz, Project Director, and staff developers Anthony DeFazio and David Hirschy.

Introduction

This Project PROPEL Handbook is a collection of descriptions, educational philosophy, and curriculum materials generated at The International High School to assist adopting sites in developing their own programs. As a team, we recognize that packaged programs transplanted to other settings face limited success. We believe that the focus should be on the *process* of developing successful educational programs. The nature of the programs that result should be based on sound student centered pedagogy and should be unique to each setting.

Just as the teacher is a guide to students' learning, this handbook should be viewed as a guide to educators attempting to reorganize schools. While these materials were developed to address the needs of limited English proficient students, the approach to reorganizing schools may find wider application.

As educational reform becomes simultaneously a classroom, school wide, community, and national issue, we need some organizing principles to avoid yet one more program in a headlong lurch toward educational excellence or one more sledgehammer for educational change.

One principle to guide our efforts at school reform is to focus on students, their needs, and their learning. The basic relationship between teacher and students in support of learning must be accounted for in any school wide, community or national agenda. We must act on the belief that students can learn and teachers can teach.

We believe that staff development is key to the reform of schools. The conditions which promote staff development are the same as those for students. Teachers and administrators must be willing to risk change. School governance models must support teachers' growth and professionalization. We recognize that this developmental process takes time, support, and is most effective when it is self-generated and self-correcting.

Project PROPEL exists as a resource to teachers, schools, staff developers, and policy makers in school restructuring efforts.

Contents

The International High School at LaGuardia Community College

The International High School at LaGuardia Community College, an alternative high school serving the needs of limited English proficient students, was founded in 1985, as a joint venture of the Board of Education and the Board of Higher Education of the City of New York. It was funded as a Special Alternative Instructional Program (SAIP) under ESEA Title VII in 1988. Our mission is to enable each of our students to develop the linguistic, cognitive and cultural skills necessary for success in high school, college and beyond. The program is alternative in its admissions policy, population served, school governance, teaching methodology, setting, and opportunities for both students and staff.

The International High School admits only students of limited English proficiency, who have been in the United States fewer than four years at the time of application. Once admitted, the students remain with us for their entire high school careers. They receive a complete high school curriculum taught with an ESL content based approach. At the same time, students have the opportunity to maintain and further their native language development through native language arts courses, peer mediated instructional activities, and instructional materials and textbooks in their native languages.

All classes are heterogeneous, that is, students are not grouped according to language level, achievement level or grade level. They register for classes the same way college students do, signing up for required and elective courses that will help them fulfill graduation requirements. A major feature of the curriculum is the experiential education program which provides a sequence of courses emphasizing the social sciences, combined with three career internships in the world of work, where students have the opportunity to extend their knowledge of English and U.S. culture in real life settings.

The entire staff shares major administrative responsibilities through the committee structure. The Staff Development Committee plans and oversees the entire inservice staff development program. The Faculty Personnel Committee interviews and selects new staff members, and administers the peer evaluation program. The Curriculum Committee coordinates the ongoing curriculum development of the school.

Committee membership is crucial to our teaching approach. It enables teachers to experience the collaborative process that they expect of their students. They can then more credibly serve as role models.

The college campus setting provides us with many facilities not often found in public high schools, such as a broad range of media including a TV studio, numerous computer labs, and a complete microfilm library of *The New York Times*. Teachers from the college regularly teach courses at the high school, while teachers from the high

school also teach at the college. Some classes are team-taught by one high school and one college teacher, and are open to both high school and college students. High school students can take college courses with matriculated college students for both high school and college credit, thus increasing their access to curricular offerings.

Mission Statement

The mission of The International High School is to enable each of our students to develop the linguistic, cognitive and cultural skills necessary for success in high school, college, and beyond. We are committed to the following educational principles.

Educational Philosophy

1. Limited English proficient students require the ability to understand, speak, read and write English with near-native fluency to realize their full potential within an English-speaking society.

2. In an increasingly interdependent world, fluency in a language other than English must not be viewed as a handicap, but rather as a resource for the student, the school and the society.

3. Language skills are most effectively learned in context and embedded in a content area.

4. The most successful educational programs are those which emphasize high expectations coupled with effective support systems.

5. Attempts to homogeneously group students in an effort to make instruction more manageable, preclude the way in which individuals learn best, that is, from each other.

6. The carefully planned use of multiple learning contexts in addition to the classroom (e.g., learning centers, career internship sites, field trips), facilitates language acquisition and content area mastery.

7. Career education is a significant motivational factor for adolescent learners.

8. The most effective instruction takes place when teachers actively participate in the school decision making process, including instructional program design, curriculum development and materials selection.

Content Based English as a Second Language

Language is a medium for communicating, for learning, for thinking. When children are taught a second language without purpose, it is unlikely that the language will be learned very well.

Students need to be able to do more than greet people, negotiate their way through the supermarket, write and produce skits, and leave messages on answering machines. The cognitive/linguistic demands on students include analyzing data, making inferences, comparing and contrasting, predicting, drawing conclusions, and all the other linguistic tasks we require of mainstream students in content classes. Without the opportunity to engage in these tasks, students cannot develop the skills.

There are two types of language we need to address in teaching English: academic English and social English. Social English can develop informally through interaction with native speakers, and formally in a classroom setting. Academic English, however, must be developed in a classroom setting. The vocabulary, sentence structure, and style of academic English differ markedly from social English.

Often teachers of limited English proficient students use content areas (academic subjects such as social studies, science, mathematics) as an excuse for teaching language. Their lessons are organized around the linguistic points that are being taught, while the content is a vehicle for focusing on those linguistic points. The content is almost inconsequential. With such an approach, students don't progress much beyond naming things or stating facts.

Content (data, concepts, ideas) exists apart from language, but language does not exist apart from content. Furthermore, language is more readily remembered when it has meaning and when it is in context. Content based English as a second language instruction means that language is an *outgrowth* of content - that by experiencing and learning new concepts, students extend their language base. Philosophically, it follows the idea that comprehension precedes language.

How then will students internalize the structure, syntax, and phonology of their new language? An experience-based curriculum, which enables the students to understand the concepts they are dealing with, will firmly support their English language acquisition. In the process of engaging in experiences and project development, they will be practicing structures that teachers and other students model. They will create and investigate hypotheses about how their new language functions. From time to time teachers might make brief explanations about the grammar of the new language. But, this is for the purpose of helping the students refine their language as opposed to using grammar to teach the language.

What English as a second language teachers can learn from good content teachers is to focus on concepts that are abstract and transcend curriculum areas, concepts such as *power, control,* and *interdependence.* For example, the concept of interdependence can be demonstrated by content examples about people in groups (governments, societies, teams, classes in school), about ecological phenomena (food chains, pollination), about mathematical principles. As the concept is examined in its multiple contexts, the students' understandings are broadened to enable them to apply knowledge to new situations, thus engaging them in higher order thinking skills.

Content teachers, on the other hand, can learn a great deal from English as a second language teachers. English as a second language teachers are masters at making information concrete. They know how to present material step by step. They know how to start at the beginning. Many teachers do not do this, because to them the beginning is where their preconceived curriculum begins, regardless of the group of students they have before them. When they take the time to discover where their students are, they often find they have to redefine the beginning.

Given the large population of immigrants in the United States, and the high degree of expertise that has developed over the past decade in educating them, school systems can no longer ignore the basic educational needs of English as a second language learners in their mainstream classes, placing the onus on the students to figure out the coursework on their own. Schools can no longer leave the job of developing the students' English competence exclusively to English as a second language experts. Likewise, English as a second language teachers can no longer focus solely on English language development isolated from their academic coursework.

Strategies for Limited English Proficient Students

It has frequently been said that English as a second language techniques are nothing more than good pedagogy which should be universally applied by teachers. What makes the teaching of limited English proficient students different from teaching students fluent in the language of instruction is the fact that nothing can be taken for granted. We have some principles which we have found especially appropriate for teaching our student population:

Start at the beginning: The beginning is elusive. When we attempt to start at the beginning, we find that it is always many steps prior to what we initially identified. We are constantly going backwards.

> In an interviewing project, a student was assigned to make an appointment with his interviewee. Every day he came to class saying he made an appointment but somehow the interviewee wasn't available. It turned out that this student had no concept of *making an appointment*. The subject was busy each time the student approached him, and no attempt was made to establish a future interview. In a situation such as this, it is necessary not only to teach the meaning of the word *appointment*, but to teach the procedure of making an appointment.
>
> If we assign a book report, we might have to start with where to go to get a book, and how to select a book. We might even need to show how to use the book once it is selected.

Break down the task: We cannot assign the students long term or ongoing projects without establishing the steps and a timetable. We cannot give an assignment such as "Do a book report" without establishing a model. The class can begin by reading a book together, developing an outline together of what they want the book report to include, and writing it together, with the teacher recording it on the chalkboard, chart, or demonstration computer monitor. It subsequently can be duplicated and distributed for the class to revise together, before students are required to produce their own book reports.

Model the *process*: So often we are told to provide models for students. Typically, students are presented with models of finished products. Students who are new to a language, a culture, and a system need modeling of the *processes*.

> If students are assigned to write journals, then the teacher should write his/her journal on the chalkboard *while the students watch.*
>
> In an interviewing project, the students need to be shown how to create questions before they are required to create their own. A way to do this is to list all the items they want to know about their interviewees (e.g., name, language, occupation, residence, hobbies). Then discuss point by point what questions to

ask in order to get the desired information. Then the students can develop their own questions, and finally, they can put the questions in a logical sequence.

Elicit as much as possible from the students. Tell them answers only as a last resort: Crucial to *cognitive* development (the development of thinking skills) and to *concept* development (the recognition or discovery of categories of ideas and information) is the ability to classify and cross-classify. When students are given categories in order to classify information, they are being deprived of the opportunity to develop an important intellectual skill, and remembering becomes more difficult.

A good activity for concept development is to list on the board all the items suggested by the class regarding a certain topic. Have the students identify which of the items have qualities in common, and group them accordingly. (They must explain what the common quality is.) Then have them provide a label for each group. It is at this point that the students might have trouble, due to limited vocabulary. So here, the teacher can supply the label if the students can't come up with one. *Vocabulary development* and *concept development* go hand in hand.

Break the rules: Traditionally, teachers have been told in methods courses not to repeat questions, and not to repeat student answers. The reasons given were that students wouldn't listen carefully if they knew questions would be repeated, and that they wouldn't speak clearly if they knew the teacher would repeat their responses. This is not good advice in dealing with the student population we are addressing. Teachers have also been told not to talk while writing on the board because their backs will be to the students. There is ample reason to write on the board while talking to second language learners.

Repeat a question two or three times. The amount of surface information a second language learner can hold in short-term memory is much smaller that of a native speaker, because the second language learner is doing more: listening for more detail and processing the information in smaller chunks (and therefore more slowly), attempting to distinguish between similar sounds, and translating. Repetition enables youngsters to process the linguistic information more thoroughly and increases their possibilities of replying. Ask a question in two ways. Youngsters should listen for the one they understand and work out an answer for that question. Be certain that the students know it is the same question, and not two different questions.

Repeat student responses. In repeating student responses, the teacher can make corrections without offending the student. The teacher reformulates what the student has said in order to help the student articulate his/her idea more clearly. In reformulating, the teacher can change vocabulary or grammar, and can also model pronunciation, so that the class hears the information correctly.

Write everything on the board as you say it for the second or third time, so that students can match what they hear with the written form. Students whose

reading is more advanced than their aural comprehension might understand the written form more readily than the spoken form, and those who are more aurally advanced will be advancing their reading ability.

Use the students' native languages. Write key words in English and ask youngsters to write them on the board in their native tongues and native scripts. Ask the class to look at and pronounce the English words with you. Ask individuals to pronounce their native language translations. Ask for conclusions about the people in the class and their languages and the concept under discussion based upon the board presentation. An activity such as this fosters pride in one's own language and respect for the languages of others. Students frequently learn concepts in their new language that they never dealt with previously in their native languages, so this activity can assist them in increasing their vocabulary in their native languages as well as in English, and in clarifying concepts which may differ slightly from one language to another. The message to the class is that *every* language is a prestige dialect and there are no marked languages or, by implication, students.

Miscellaneous suggestions: Write clearly, neatly, and consistently on the chalkboard and on student papers. In fact, you probably need to improve your own handwriting, both cursive and printing.

Be consistent in your use of capital and lower case letters. Don't suddenly write a capital letter in the middle of a word. Point out similarities and differences between letters, and between capital and lower case letters. A student learning the Roman alphabet has no way of knowing whether the *T* crossed at the top is the same as the *t* you just crossed in the middle, nor might he/she know that the length of the stem can make the difference between *h* and *n*, or between *r* and *n*.

Vary the way you group the students. Assign them in small, cross-cultural groups, to work on a meaningful product whose completion must be negotiated in English. At other times, they can work with partners or small groups of the same language background. This provides a chance to enhance use of native language skills to produce something in the class.

Choose key vocabulary items that are necessary for the lesson. Write them on the board so that they can be seen by the students. Use an adequate number of examples and non-examples (items that don't belong). Most vocabulary represents concepts that need to be fully understood and processed.

Collaborative Learning

Collaborative learning thrives on diversity and assumes that everyone in a group has something to offer. It recognizes that students have an incredible variety of cognitive and linguistic skills, varied educational and cultural backgrounds, and varied levels of English proficiency. Collaborative learning capitalizes on this wealth of experience. Heterogeneity is not a problem to be solved. When it is embraced, it is a positive force in the classroom. It makes learning a social activity, and knowledge, the outcome of interactions among individuals. The products of collaboration - at school, in research, in business - are invariably better than products created in isolation. Two heads really are better than one.

Most schooling operates in an authoritarian structure where classes are teacher dominated. Teachers are transmitters and students are the receivers. The expectation is that all students, at successive levels, have had similar academic preparation and prior experiences; that they will all respond to the same treatment; and that some years hence, they will all have learned and retained the same subject matter. Our experience shows that this is not true. Education increases differences as students focus on and develop areas of strength.

In collaborative classrooms the roles of teachers and students are redefined. Teaching is subordinated to learning. The emphasis is on student activity, while the teacher acts as a coach, helping students to arrive at answers, interceding when necessary, backing off when not directly needed. The role of teacher becomes more complex in this model, since he/she is interacting with students as individuals and as members of a group rather than dealing with a whole class at the same time.

Many of us experienced collaborative learning during our elementary schooling. There was a variety of things to do and a variety of places to do those things. The classroom was a laboratory. Sharing was the norm. Whole class lectures were kept to a minimum. The level of excitement and energy in those classes contrasts with what occurs in many high school classrooms today.

When students are actively engaged in problem solving, the chances of meeting their needs are greater than when they are passive learners under the transmission model of pedagogy. They have the opportunity to study a problem in depth, and to work in an environment in which variety is expected. Part of their obligation is to include others as they continue to meet high expectations. Those who previously might have been left behind are part of a group of peers who have a stake in their success. Those in the middle are no longer able to hide because they are called upon to respond in a variety of situations and challenges, and have a responsibility to the group.

Using collaborative learning with heterogeneous groups is not a bag of tricks. It is no panacea. It is, however, a way to organize a learning environment that fosters respect for difference, encourages investigation in depth, and emphasizes the social aspects of learning.

Interdisciplinary Study

The compartmentalization of learning and the departmentalization of our schools has resulted in a fragmentation of learning and a focus on increasingly isolated bits of knowledge. Basic questions have gone unasked: Who am I? What is the nature of the world around me? What are my responsibilities to others?

Interdisciplinary study begins to reverse this trend, unifying, connecting, and building small learning communities. These communities create a natural support group for each student academically, socially, and emotionally. Planning for the course leads teachers to plan collaboratively for instruction based on students' interests and needs. These factors, taken together, create student success.

By studying across disciplines, the context in which learning occurs is expanded, that is, the student no longer thinks of learning as taking place in an isolated classroom, but can relate experiences to each other and can view all environments as places of learning. Different disciplines are viewed as interacting, reinforcing and broadening one's perspective.

Interdisciplinary study can range from simply linking courses to be taken together at the same time, to thematically based study in which a theme is explored through a variety of disciplines, to blending several subjects into an integrated whole.

Organizing learning around conceptual themes exercises our abilities to discover patterns, make connections, organize experiences, and explore various points of view. The organizing principle for schools and learning has moved from covering material and learning facts to one based on higher order thinking skills.

School in this model is not just a place to train students to fit into society, but rather a place to help all of us understand and change our lives, both students and staff. The small communities created address the personal and emotional needs of students. High school students are often overwhelmed, uncertain, and isolated. By working with others, students experience that they can solve problems, can be responsible for their learning, and experience self-confidence.

The teamwork required in planning interdisciplinary study develops collaborative skills in teachers and models the process of collaboration for students. It presents the opportunity to rethink the essentials of our disciplines.

The success of thematically based interdisciplinary programs has prompted the faculty of The International High School to reorganize the curriculum of the entire school around interdisciplinary thematic study.

Examples

Beginnings

One interdisciplinary team at The International High School combines English as a second language, career education, biology, and mathematics, organized around the theme *Beginnings*. The thread that ties all the components together is an emphasis on origins. Students examine the formation of the universe, and the genesis of life, the beginnings of their lives, the beginnings of their lives in a new country, and the beginning of career exploration.

Visibility/Invisibility

Another interdisciplinary set of classes focuses on *Visibility/Invisibility*, a set of connected courses in which students receive literature, math, physics and physical education credit. Through literature students learn to read critically, to write both academically and creatively, and to express themselves in small and large group settings. Visibility is broadly interpreted as the perception of pattern and meaning in our language, lives, and literature. Invisibility is explored in literal, metaphorical, and cultural terms.

Students begin by studying the eye, the limitations of the seeing process, illusions, and the nature of light. The science and math component leads students to an understanding of the basic and invisible structure of our universe i.e. the gravitational force, the electromagnetic force and the nuclear force. Through laboratory activities students use mathematical methods to model, quantify and understand these forces. The history of scientific inquiry and discovery that led to our understandings is emphasized.

Project Adventure, the physical education component of *Visibility/Invisibility*, includes advanced individual and group problem solving in physically challenging situations. The cycle of activities leading up to and through the high ropes course inculcates in students a real, physical sense of responsibility for each other's safety. This in, turn, develops the trust and confidence that lead to successful completion of tasks and, ultimately, from physical risk taking to cognitive risk taking - a quantum leap. Skills learned in this adventure-based, experiential curriculum allow students to operate more efficiently and effectively as individuals within a group and collectively as a group, in literature, physics, and math. A sub theme is to explore how ideals and values become visible in our lives.

Alternative Assessment for Students and Staff

There is a relationship between the management style of a school and the learning style in the classroom. When the management style is authoritarian, the learning style in the classroom is authoritarian and teacher-driven. When we change the management style to a more democratic, collaborative style, it becomes a model for learning in our classrooms. In many of our classrooms and programs, teachers have created alternative ways of assessing students, incorporating elements of the staff evaluation model at The International High School.

The following is an excerpt from the publication, *Personnel Procedures: Peer Selection, Support and Evaluation at The International High School* (available on request).

> All personnel committee members agreed that they would like to see an evaluation system which fostered and supported professional growth on the part of the teacher. So our task became one of developing a way to do that. We began to change our view of evaluation from one of judging to one of promoting development. In discussing what we would find most helpful personally, we felt it would be a combination of self evaluation and peer evaluation with other professionals in a sharing relationship.
>
> In order to begin developing a new structure, we organized the entire staff into self selected peer support groups of three or four. The only requirements were that new members of the staff would work with those who had been at the school longer, and non tenured teachers would work with tenured teachers. The first task of each group was to identify goals for self improvement as teachers or guidance counselors. Because the goals are personal and individual, they are meaningful and the staff is committed to realizing them. We hear a lot about "top down" administration as a barrier to educational reform. One way to combat that is to have school wide goals develop from individual goals.
>
> The personnel committee felt that a meaningful evaluation procedure must include two components that are omitted from traditional procedures. The first is a strong component of self evaluation. Individuals have a greater commitment when they identify their own needs, and their standards are higher when they set their own goals. The other component involves a professional sharing and a peer evaluation that does not exist in the average school because of professional isolation. The peer groups are intended to eliminate that isolation.
>
> If we view ourselves as effective educators, we must also view ourselves as learners. We are role models for our students. If we model authority, our students will learn to be authoritarian. *If we model self improvement in an atmosphere of sharing, that is what our students will learn.*

As a result, we recommended and the staff agreed, that each faculty member would maintain a portfolio which would contain, as a minimum, the following:

Tenured teachers: 1 administrative evaluation, 1 peer evaluation, 1 self evaluation

Non tenured teachers: 2 self evaluations, 2 peer evaluations, and 2 administrative evaluations

All portfolios should include 2 class sets of student evaluations for each cycle.

The third initiative of the committee was to establish a system for peer review and assessment which involved the whole staff. In order to allow the support groups to emphasize staff development, we chose to maintain the distinction between the peers who provide support and those who evaluate. In order to have the full support of the staff, this process was recommended, submitted to the staff and revised several times. The document we all agreed to recommends that at certain points in a staff member's career, he or she makes a presentation before a peer evaluation team of four randomly selected staff members (including someone from the personnel committee who acts as chair) plus one member of the presenter's peer support group. All faculty members are reviewed by peer evaluation teams in their first and second years at The International High School. The teams then determine matters of appointment, continuation of probation, tenure and continued service. Tenured faculty members are reviewed every three years.

The Portfolio Process in the Classroom

Assessment in *The Motion Program*, an interdisciplinary program described in a later chapter, is based on a portfolio of work, developed by each student, with a strong self-evaluation component, feedback and evaluation by peers, and finally, teacher feedback. The final grade is arrived at in conference with the student, two peers, and the instructors. The process of how the portfolio is developed, read, and evaluated is critical to its success.

The portfolio includes a personal statement, a mastery statement, a selection of what the student feels is his/her best work, and a self evaluation. Two other students then read the portfolio and write approximately one page of reactions to the student, evaluate the classwork, the portfolio, and recommend a final mark. Two instructors read the portfolio, write reactions, and recommend marks. Students in the program developed the guidelines for assigning marks.

The final conference lasts from five to eight minutes and concludes with assigning marks. It is a time for the student to reflect on his/her progress, for students to acknowledge areas of strength and recommend directions for change. Teachers have input and serve as a final check on the process. These conferences are often powerful

catalysts for change. The order in evaluation and comments during the conference is self, peer, teacher, and then self. It is important for the student to be able to revise their evaluation based on the comments of others.

The collaborative nature of the class activities provides multiple contacts with the language, the ideas, the skills, and the content in the classroom. The portfolio expands these contacts by having students select their best work, writing the personal and mastery statement, reading, and reacting to their peers' work.

In a collaborative group, self assessment happens very early on and naturally. Students read the materials individually and with others while they do activities. As they check with each other and share ideas, self assessment has already started.

Given the heterogeneous nature of students and groups in the classroom, students are encouraged to develop their personal goals and standards. They are encouraged to write in their own words, and to communicate in their own way about the activity in progress. When activities are completed, students communicate their mastery to an instructor or to other students in order to receive credit. At this point they may have to revise or expand their work. As students work with each other and with teachers, revision and variety are expected.

In the personal statement, students are encouraged to think about their progress as an individual within a group context. *Competition and comparison with others is minimized as students develop internal standards as well as class standards.*

The portfolio process acknowledges a variety of standards. Internal standards are applied in the self evaluation, group standards are applied in the peer evaluation, and the larger community standards are applied in the faculty evaluation. As Ancess and Darling-Hammond point out,

> Actually, these multiple sets of standards exist in all classrooms, but, except for the teacher's standards, they generally remain hidden, unacknowledged and without voice. This contributes to many students opting out of the formal system, feeling it does not represent what they deem important.

Through the mastery statement, students develop the higher cognitive skills such as recontextualization, synthesis, and abstraction. Although students may work on the portfolio together, their statements are valued as individual work. In this classroom environment, copying or using another's words is a strong taboo. Individuality, variety, and clarity of expression are valued.

The cumulative effect of the process is that students recognize the need for assessment to check and validate their progress. In this relatively public environment students and teachers support each other in their individual growth. This is in contrast to the trauma and isolation associated with the usual testing procedures.

One student put it this way, "When I take a test, I study, I remember until the test, and then I forget it. When I do the portfolio, it is really mine, and I have it for a long time." *Daria K.*

As educators, we have been led to trust testing, because of its simplicity and its apparent fairness. While it may be simple, it is often not fair. Further, it can be counterproductive in our efforts to produce self motivated, confident learners able to use the resources around them in a pluralistic environment.

Traditional Testing

The following are some of the reasons we have abandoned testing as a means of assessment in The Motion Program:

Testing does not usually measure creativity or multiple approaches in problem solving.

Testing often ignores process.

Testing usually emphasizes breadth of coverage rather than in-depth cognitive achievement.

Testing often measures the language environment of the student rather than his/her learning. It may be dependent on how well the parents speak, the level of scholarship in the school, the number of years in an English speaking environment, etc.

Standardized testing is a flawed measurement tool or predictor of success for the non-traditional student.

Testing is a segregating device. It is often used to track students.

Testing creates an artificial environment. It does not model the real world in which people's successes often depend on their ability to use the people and resources around them.

Testing is time-bound. It does not allow students to pace themselves naturally in their work. This may be critical for the non-traditional and limited English proficient students.

Testing in the classroom usually does not measure individual growth, nor does it measure growth of the whole person.

The Portfolio Process

In contrast, the portfolio process serves to encourage:

- longer retention
- higher level cognitive skills
- development of internal standards and self-reliance
- ability to use a wide range of resources
- creativity and variety in problem solving approaches
- social skills
- a language rich environment

The portfolio process enables students to develop the linguistic, cognitive and cultural skills necessary for success in high school, college and beyond.

How do we know?

The students tell us how they are doing. They come to class. They often work for extended periods, up to two and one half hours, without a break. They pass their classes. In the past year and half, over 140 students have enrolled in The Motion Program, and each one has passed all of the four classes.

The portfolio process is not the only critical element in the program's success, but it plays a major role. Here are some student comments on the portfolio.

> The portfolio is a very helpful task which helps students to learn more things, and at the same time show the things that students have already learned. It also helps to evaluate the work students have done during a long period of time in a fair way. The portfolio is fair because it reflects everything the student achieves and lets them express their own ideas and thoughts. It gives students a freedom of thinking and learning.
>
> *Katherine O.*

> The portfolio is good because in discussing with others, writing, revising, it helps you accumulate the past lessons and activities in your mind. Even now after finishing Motion almost a year ago I still remember the things I learned. It is better than tests. When I take tests, it doesn't stay in your mind.

Asking students to evaluate their work first is a little hard. When I first started, I wasn't sure of myself and the work that I did. I needed a teacher to check it and tell me if it was right. At the end of the class, I had confidence that my work was good after discussing it with other students. I didn't need a teacher to say it was all right.

I feel proud when other students read and evaluate my work.

Walter N.

The conferences are a very important part of evaluation,... Usually most students are fair about their grades, and often get the grades which they give themselves. The conferences are a little scary, but it is good. They help you understand your work better and how to improve it.

Maria B.

Translating the staff evaluation model into our classrooms points to the importance of the school governance model in communicating to teachers and students our educational values. *Changes in the reality of our schools must ultimately change the reality of our classrooms.*

The Motion Program

The Motion Program is a set of connected courses which explores the concept of motion from the points of view of several disciplines. Students receive credit for literature, mathematics, physics, and physical education. The course is taught by a team of teachers from The International High School and LaGuardia Community College faculties. Through a combination of individual and group work, students develop a portfolio of work that demonstrates their mastery of the concept of motion. Trust, collaboration, individual and group responsibility are reinforced in each of the classes.

The physical education component explores motion through Project Adventure, a cooperative and adventure-based learning experience. Students engage in physical experiences that encourage individual and group growth. One part of the program involves climbing on a ropes course.

The literature component explores the ideas of motion, movement, and change as expressed in fiction, nonfiction, and poetry. Students also use the writing process to produce creative writing and autobiographical work connected to the theme of motion. This class supports the development of communication skills which enable students to share their feelings, emotions, and individual lives.

The math and physics component is team taught with an emphasis on collaborative experimentation which leads students to a fundamental understanding of motion.

The Context

Motion, as a topic, has been the basis for our first physics course at The International High School for several years. It has developed into a stable, popular, and successful course of study. The materials support small group work and experiential learning for heterogeneous students.

One of the factors that led to the creation of the interdisciplinary motion program was the desire for increased articulation between the math and science programs. Previously students selected their science courses from a range of courses including physics, chemistry, biology, computer science, and *Human Development.* Science courses were modular and emphasize experiential, "hands-on" work. The physics courses have carefully avoided an approach which emphasizes algebraic manipulation as a prerequisite skill to doing physics. While this made physics available to all students, it also demonstrated that most students do not apply the skills learned in their math classes to the situations presented in the science classroom. Math programs were tightly sequenced and emphasized a skills approach to problem solving with little or no experiential components.

Inspired by the successes of Uri Triesman in developing new curricular models and support systems for minority students at Berkeley, a planning team from The International High School, Middle College, and LaGuardia Community College piloted an interdisciplinary program based on motion.

The interdisciplinary nature of *The Motion Program* leads students to appreciate and use mathematics to explore the theme of motion. Students create algebraic equations to understand the physical situations before them. They use graphs to demonstrate and explore relationships between variables. Prediction is an integral part of each activity. The distinction between math and physics is blurred. Students who "hate math" or "can't do math" are surprised to learn that they are doing math.

Expanding the program to include literature and Project Adventure was a key element in the development of The Motion Program. Linking the entire program and creating a small learning community serve to integrate not just the math and science learning but students' whole school experience. This community creates a natural support group for each student academically, socially, and emotionally. Planning for the course leads teachers to plan collaboratively for instruction based on students' interests and needs. These factors, taken together, create student success.

As students experience success, they are more likely to view themselves as able to enter careers based on science and math. Further, students who are interested in science and are weak in math have an alternate, experientially based means to develop math skills.

The expanded context and thematic approach provides students with a broadened focus on those abilities which will enable them to understand and pursue careers in our increasingly technological society.

Educational Philosophy

At a meeting in a room with over thirty faculty members present, four students representing the heterogeneous nature of *The Motion Program*, i.e. academically solid and weak, 9th, 10th,11th, and 12th graders, males and females from different cultures, systematically articulated for almost forty minutes why this class works for them. The students actively engaged the faculty in demonstrating the processes by which they were able to generate algebraic equations, develop trusting relationships, understand physics, write creatively, think clearly, express themselves, and enjoy it.

The Motion Program demonstrates that our efforts as staff members, focused collaboratively, can create a richer learning environment than any one of us can individually.

The program contains the following elements:

Collaboration

Each individual's contribution and growth are valued within a group context.

The atmosphere is supportive rather than competitive.

Differences are viewed as complementary rather than conflicting.

Heterogeneity

Different linguistic and cognitive skills, a variety of age groups, educational backgrounds, experiences, cultural backgrounds all serve to enrich collaborative group work.

High Expectations

There are high and varied expectations for each individual.

Creative support systems aid students in accomplishing these expectations.

A variety of outcomes and results is expected.

Whole Language/Learning In Context

Reading, writing, speaking, and listening are learned in a meaningful context, integrated naturally into course work, in contrast to an isolated basic skills approach.

In-Depth Emphasis

Quality, in-depth work is emphasized rather than a broad coverage of content.

Student Centered Approach

Each student's responsibility for learning is acknowledged and supported.

Teaching is subordinated to learning.

Experiential Learning

Direct student experiences form the basis for learning.

Process Emphasis

There is an emphasis on strategies for problem solving, discovering relationships, and analysis, i.e., those skills that are most likely to be transferable to other situations and which are worthy of attention regardless of the context.

Evaluation

Non-standard evaluation uses individual portfolios to demonstrate learning rather than normative examinations.

Self-evaluation is emphasized along with peer and instructor evaluations.

Sharing

Sharing the results of work with others forms the basis for group learning, meaningful completion, and self-evaluation.

Sharing in a variety of ways leads to poise, self-confidence and increasingly skillful communication.

Choice

Student-generated projects are combined with core work.

Students form their own groups, suggest directions for the class, and make requests of the instructors.

Interdisciplinary Study

The context in which learning occurs is expanded.

A variety of ways of knowing and learning styles is acknowledged and encouraged. This variety is viewed as supportive rather than conflicting.

Compartmentalization is reduced.

Physics, mathematics, literature, and Project Adventure are viewed as interacting and reinforcing.

The group stays together all day in larger blocks of working time.

Holistic Approach

There is a focus on developing the whole person: feelings, mind, body, and social relationships.

Teachers relate individually and as a team to each student.

Teachers plan together.

There is one grade for the entire course.

Students are led to explore their differences and strengths together in a variety of settings.

The whole group becomes a supportive, familial social unit for each of its members.

Notes for Teachers and Program Developers

Initial Conditions Critical for Success

Staff planning and consensus building on basic educational philosophy, evaluation, goals, scheduling, and procedures are essential at the outset.

There must be time for planning before and during the course.

When people are teaching interdisciplinary classes in a new subject, they should be prepared to be learners.

All new members of a team need to spend time in the program to understand the logistics and dynamics of the environment before assuming full responsibility.

Course materials need not be in place for the entire term. They should be in place approximately one month in advance to permit teachers to plan effectively for long-term and short-term goals.

The teacher's role in a student-centered classroom is quite different from that in a traditional classroom. The following observations came from members of the Motion team. All members of the team started their teaching careers as traditional teachers and, by experimentation, have grown to share certain values and practices which govern their interactions with students.

Traditional Classroom

Understanding is often achieved by the repetition of set patterns, solving problems in a linear, prescribed manner.

The teacher often participates by giving information and answering questions.

There is usually one thing happening at a time, with a strong effort to focus everyone's attention on it.

Student responses are often judged as right or wrong.

Students are not grouped. Sharing of answers is not encouraged.

There is a strong effort to move everyone through the same material in the same time frame, and then individuals are evaluated by exam.

Exams tend to focus on correct answers, information recall, and problem solving with little emphasis on process.

Student-Centered Classroom

Understanding comes through direct experience and verbal interaction about those experiences.

The teacher's role is supportive rather than directive. Questions are often restated, recontexualized, and referred back to the group.

Students work collaboratively on a variety of tasks at the same time. This variety allows groups to pace themselves and come to closure when the group is ready.

Each individual's questions and contributions to the work are valued. Variety in thinking patterns and problem solving is encouraged.

Based on the premise that students learn best from each other, groupings are heterogeneous.

There is an emphasis on process as well as product.

Evaluation methods include self, peer, and instructor components which focus on individual growth and contribution to the group as well as mastery of content.

The Teachers' Role in the Classroom

The teacher's daily role in the classroom includes three critical functions: to structure the environment and student activities; to support group work; and to review, debrief, and bring groups to closure.

Structure

Supply the least structure necessary. More structure is necessary at the beginning. As the community is established, teachers should decrease their role, allowing students to assume more responsibility.

Build student choice and responsibility into the process wherever possible.

At a minimum, students should arrive on time, record their attendance, choose their groups and activities, and remain with their groups until the activity is completed.

Activities need clearly written instructions and clearly written questions.

Each activity should be experiential and active, involving either an experiment, or a group activity, a product, and a presentation.

The activity should be language rich and involve reading, writing, listening, and speaking.

There should be a variety of cognitive difficulties in the activity, something to challenge everyone.

Questions should progress from a simple level, e.g. ,

What did you notice? What happened?

to more difficult levels, e.g.,

Why did it happen? What pattern do you notice? What relationship did you discover?

Support for Groups

The teacher's role is to keep students on task. They may need encouragement, clarification, materials, or assistance as they work. A focusing question such as, "What are you doing?" is often all that is necessary.

Teachers need to monitor groups. Participation in the group should be balanced. Intervention is sometimes necessary: "How is it going?" "Does everyone have a job?" "Oh, how can you fix it?"

Closure

The results of work need to be shared with others. Communicating about the activity to others demonstrates mastery.

The teacher needs to orchestrate closure carefully. This is the point at which students receive credit and the standards for the classwork are established and maintained. An activity is not complete until each person in the group demonstrates understanding. If there have been uneven contributions to the work, and a member does not understand, then the group accepts responsibility.

The norm is to have the teacher orally debrief the group by asking questions. Each person should participate. There should be a variety of cognitive difficulties in these questions to allow individuals to demonstrate their level of mastery. Here is an opportunity to set the group's effort into context, or to transfer and expand the context of the group's work.

When team teaching is occurring, there should be a common standard for the rigor of the debriefing as well as the acknowledgment that the debriefing may differ depending on the group. This balance is one of the most difficult things to accomplish in this classroom model. It is the time when knowledge of the subject, experience with students, and careful observation of groups come to bear.

Having students plan a presentation and present their work to the class is an opportunity to have whole group discussion on key ideas and concepts.

Having students explain their work to a visitor is an excellent way to demonstrate mastery.

Closure is the time for the acknowledgment of a job well done, praise, credit, and always,...*What's next?*

Sample Activity Guides for The Motion Program

In order to demonstrate how the theme of motion is explored in literature, math, and physics, we include here the introductions to each area, a complete listing of topics showing the range of activities, and sample activity guides for students.

Introduction to Literature

Integrating a literature class into a group of courses based on the theme of Motion has been a challenge. While the physics/math material is bound by the laws of science and the physical world, the world of literature seems at times disconnected and at other times to offer too many possibilities.

Currently students at the school choose English classes from a list of required and elective courses: Introduction to Literature, American Literature, World Literature, Short Story, and Drama are the main courses offered. The classes support small group work and collaborative learning for students who are heterogeneous in their age, ability to communicate in English, literacy in first language, and education in first language as well as all the other factors that influence how well students succeed. With this in mind we often design the literature activities with a choice of reading materials or with similar materials written at different levels of difficulty. Writing process is also an important part of the curriculum. A key to success is designing activities that can be stated simply, but that offer the possibility of a sophisticated interpretation. Students can then think or process in their first language, finally expressing what they have learned either visually or at different levels of English mastery.

The physics/math curriculum involves hands-on, experiential learning. The physical manipulation of objects in experiments forms the basis for the ideas. Project Adventure, the physical education course in our module, involves a great deal of movement. Literature involves the manipulation of words. While it involves interaction, it is basically sedentary and in many cases students work alone.

There are important reasons for linking a literature class to the math/physics and Project Adventure classes. First is the desire to have a group of students stay together all day and have four teachers closely involved in their work. We are all able to see that students have strengths in some areas and weaknesses in others. Second, we are able to create a small community and deal with the affective needs of students by knowing them more intimately.

Second, was the belief that students in school usually learn discrete information. Motion/Literature allowed us to take the words *motion* or *movement* and expand the meaning of the words, to see how they relate to literature. We wanted students to make connections among seemingly unlike subjects. This approach helps students be creative in their thinking. Our class offered the opportunity to generalize; to go from the literal, concrete world into the figurative,

abstract one; to take knowledge from one area and see if it holds true for another. Do Newton's laws of motion hold true for human behavior, for example? Hopefully, if students begin to do this in *The Motion Program*, they will carry this ability into other classes.

The literature activities for *The Motion Program* are usually done in groups of three or four students. Groups choose to work on one out of a set of three activities. Students are encouraged to eventually work through as many of the activities in the set as possible. They can do them in any order they choose. Upon completion, credit is granted to a group if all members participate in a presentation to the teacher, to another group in class, or, to the whole class. The activities are listed below with a brief description of the material, the skills and the concepts contained in each one. Students read different versions of the same literature depending upon their reading ability.

The Theme of Motion

Activity: A whole class activity generating words and ideas associated with the word **motion**
Skills: Divergent thinking, following directions, group roles
Concepts: Motion, emotion, motive, motivation

"To Build a Fire"

Activity: Reading and analyzing the story by Jack London and writing about the relationship of motion and change
Skills: Vocabulary building, analysis of literature, paragraph writing, discussing and synthesizing ideas
Concepts: Elements of a story: plot, character, conflict, setting, theme. Relationship of motion and change in a character

Autobiography

Activity: Writing about a turning point as a moment of change
Skills: Computer word processing, revising, proofreading
Concepts: Turning point

"Southbound on the Freeway"

Activity: Reading and interpreting the poem by May Swenson and doing point-of-view writing
Skills: Vocabulary building, analysis of literature, writing with detail
Concepts: Rhyme, alliteration, assonance, how point of view affects what we see and how we understand the world

Being Moved

Activity: Reading and reacting to "Sucker" by Carson McCullers and analyzing what qualities literature has to move the reader
Skills: Plot summary, analysis, generalization
Concepts: Being moved and feeling emotions are a part of motion, unseen but real

The Paw

Activity: Writing a legend about the beginning of measurement connected to an activity in math/physics
Skills: Creative writing, revising, proofreading, computer word processing
Concepts: A standard of measurement can be relative, measuring is basic to physical order

Graphing Lives

Activity: Graphing an important period of time in one's life and writing about it
Skills: Creating a graph, interpreting a graph, collaborating, paragraph writing
Concepts: Graphs show patterns in unexpected areas

Laws of Motion

Activity: Writing a play scene applying Newton's laws to the interaction of people
Skills: Dialogue writing, collaboration, generalization
Concepts: Stopping or overcoming a pattern of behavior is difficult in the same way overcoming inertia or slowing a moving body is difficult; relationship of the affective, cognitive and physical worlds

Mind Movement

Activity: Reading from "In the Palaces of Memory" by George Johnson, defining thought and writing about a painful memory
Skills: Autobiographical writing, sharing information, synthesizing ideas, summarizing, drawing conclusions, note taking
Concepts: Motion and change can be unseen but real

"What is Science?"

Activity: Reading a selection from Richard Feynman and writing definitions
Skills: Summarizing, defining
Concepts: Scientific knowledge is gained through experience

Science and Fantasy

Activity: Writing a science fiction story using knowledge of the world based on laws learned in the physics/math class
Skills: Computer word processing, revising, proofreading, synthesizing, applying knowledge from one discipline to another
Concepts: Science fiction as a genre, Einstein's theory of relativity, conflict, character development, problem solving

Reading Response Plan

Activity: Students select stories or novels and are responsible for a certain amount of outside reading each week. Teachers can choose whatever they feel is appropriate including some science fiction.
Skills: Summarizing, vocabulary building, reacting to and judging literature
Concepts: Elements of a story, critical reading

Introduction to Mathematics and Physics

Curriculum designed for a student centered classroom focuses upon what students will do rather than what the teacher will do. As a result, most of these materials are guides which students use to support their learning. These activity guides are designed to lend sufficient structure to enable students to be at the center of their learning with a minimum of teacher involvement. Teachers in this environment function as resources, managers of equipment, trouble shooters, and general support for student groups.

The notes, "for The Teacher," which accompany each activity guide are written to set a context for the activity as well as to give some hints and ideas in using the guides. The clock symbols under the title give an approximate number of hours for students to complete an activity. They may assist your long-term planning. Students should be encouraged to complete as much work as possible, but never at the sacrifice of quality and in-depth understanding. By having a variety of activities available at once and giving students choice, there is always something next. There are more activities here than students will likely finish. This gives students an opportunity to choose and share results with other students.

The empty space on the page gives students a visual clue for how much explanation is expected. It is very important to establish that each person answers with their own words, not the words of a neighbor. These explanations allow you to monitor students' understanding and give feedback and support.

The notes indicate the science/mathematics skills and concepts implicit in each activity. There is generally a range of sophistication. A discussion with the group of the ***Mastery Activities/Questions*** at the end of each activity is generally an excellent way to debrief an activity. The teacher's notes have additional ideas for discussion.

We know from experience that we cannot anticipate all of the outcomes when students use these materials. It is the variety which stimulates the learning community. Obstacles and problems are opportunities for solutions, learning, and growth.

Physics Activities for First Half

Reaction Time
Walking Speed
Deep Breath
Rolling Ball/Floating Glider
The Domino Effect
Free Fall
Newton's Second Law
Falling into a Pattern

Math Activities for First Half

Statis-Sticks
Graphing Results
My Ruler
Statis-Ticks
Balance Beam

Physics Activities for Second Half

Slow Fast Faster
Floating Balloon
Smart Pulley
Rubber Bands / Newton's Third Law
Tennis Balls And Inertia
Momentum
Force Vectors
Falling Coins
The Hunter and the Monkey

Math Activities for Second Half

Pi
Mystery Containers
Temperatures

The Theme of Motion

The word that sums up the theme of your four classes is *Motion*. Before we start the literature part of the class we are going to look at a variety of words which relate to the word *Motion*. The job of the people at your table is to look at the words below and divide the list so everyone has an almost equal number of words. Then assign each person to write down the meaning of his/her word, and draw a picture using stick figures to show its meaning. Decide on a way to present your group's work to the class.

MOTION
EMOTION
MOVEMENT
MOBILE
MOTIVE
MOTIVATE
MOTIVATION

When you finish, answer the following questions together and be prepared to hand in and present your answers.

What happened in the group that caused the work to get done? For example, how did the group decide who would do which words, or who would speak, or whose answers to questions would be handed in? Be specific and use their names of people in the group.

What problems did the group have and how did you solve them? If you didn't solve them what ideas do you have on how they could have been solved?

When you work with a group again, what would you like to do differently to make the group work its best?

Which words on the list could be used to describe what happened in the group? Use them in sentences to describe what happened.

What questions do you have about the theme of motion in literature?

Autobiography

*Name:*_____
Partners: _____
_____
_____
Date Completed: _____

When a driver approaches a wall, he or she turns and goes in a different direction, because the driver does not want to be killed or hurt. The driver knows the wall will not move or go away. When we are leading our lives, sometimes we face something that will not go away and we have to change how we act or we will be hurt physically or emotionally. In literature, this is called a turning point.

Everyone has times in his or her life that are turning points. At this time, you make a choice and your life takes a different direction. You were leading your life as you always did in the past and then something happened. Because of this you made a decision and your life changed. You have become, in many ways, a different person. If the decision was a big one, your life is never the same. There are also decisions which may seem small but which are important because they change the way you act.

We are going to write about a turning point in our lives. To get some ideas on what you might write about, the group needs to interview each other about the following:

What was a decision you made that changed your life? What happened that caused you to make the decision? (Include yourself.)

Name:_____

Name:_____

Name:_____

Name:_____

Now it is up to each person to write about himself or herself. This composition will have many drafts. Write a first draft and revise it on the computer. This is like a chapter in your autobiography. In the chapter, talk about all of the following:

Where were you and what was your personality like before the turning point?

Describe the turning point that led you to make a decision.

What was hard about making the decision? (What did you gain and what did you lose?)

What decision did you make?

How are you different? How do you feel about the difference?

When you finish the first draft, look it over and see if you discussed all the questions above. If you feel satisfied that you have completed it, go on to the next step.

Share your autobiography with the people in your group. Ask two people to read it and give you feedback. Together they should ask at least eight questions or make suggestions. Ask them to sign their names to their suggestions.

Now choose at least five of those questions or suggestions that you feel are good ones. Use them to give you ideas on what to add to your autobiography.

When you have finished, ask two people to read your composition and correct any mistakes in spelling, grammar, usage, or punctuation. (You need to do the same for them.) Ask them to sign their names to their corrections.

Make final corrections on the computer.

Staple all your work together with the completed work on top and hand it in to a teacher for final corrections.

Correct and print on the computer.

You spent a long time writing an autobiography. Describe your feelings about writing, helping others to write, getting advice, and changing your work. Tell what was helpful and what you think should be different.

What have you learned about the process of writing?

Being Moved

*Name:*_____
Partners: _____
_____
_____
Date Completed: _____

What do we mean when we say in English: "I read this story and it *moved* me," or "That song really *moves* me."?

Do the other languages of the people in your group also use the word *move* for this phenomenon? Explain any similarities or differences and name the languages.

Why does the word *emotion* have the word *motion* in it in English?

Is there a connection between the words *motion* and *emotion* in the other languages of the people in your group? Explain any similarities or differences and name the languages.

As a group read "Sucker" by Carson McCullers and try to notice what emotions you are feeling. You will need to write them down by the time you finish.

After you finish reading, summarize the story. Try to identify the places where you felt strong emotions and write down what the emotions were.

Why do you think you felt those emotions at that time?

Share what you wrote. Did everyone feel any of the same emotions at the same places?

What conclusions can you draw about the similarities or differences in the emotions you felt and those of the other people in your group?

What does the group think makes some things we see, listen to, watch, or read move us when others don't? In other words, what qualities do stories, movies, songs, or paintings have to have in order to move us?

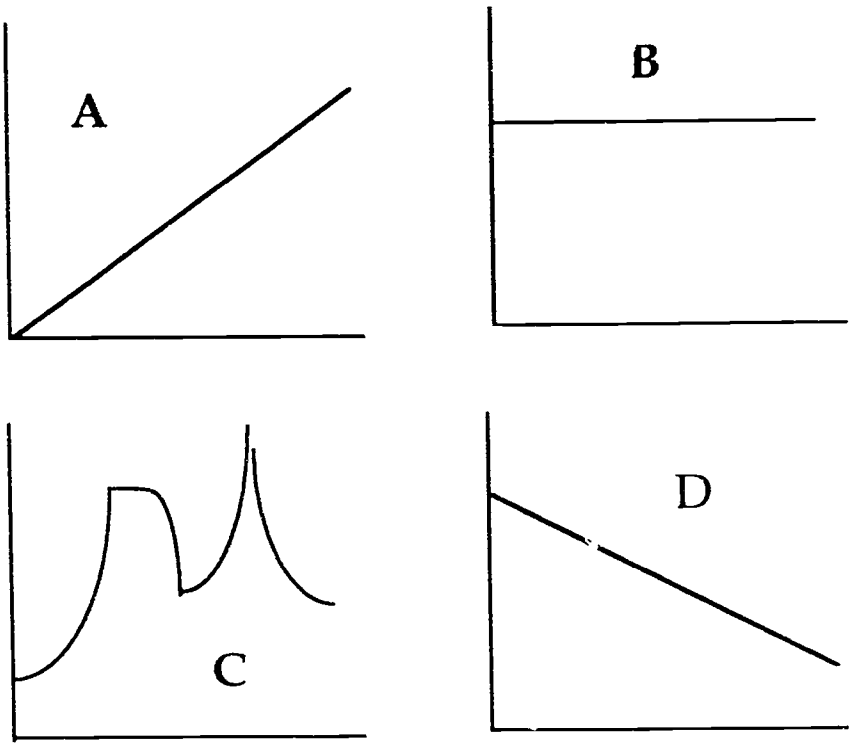
What connections can you see between the concepts of being moved or having an emotion and the study of motion you do in physics/math?

Graphing Lives

*Name:*_____
Partners: _____
_____
_____
Date Completed: _____

Graphs can show us a pattern to our measurements of speed or acceleration. By plotting the individual measurements we can see patterns and decide what the patterns mean. In this activity, we will look at patterns in lives and try to decide what they mean.

Look at the graphs below. Imagine that they are showing patterns in the lives of individuals.



Which one does not look like anyone's life in the group?

Why not? What does the pattern of this graph mean about the life of the person living it?

Now look at the graphs and decide which one(s) looks most like a real life. What does the pattern of the graph(s) mean about the life of the person living it?

Draw the graph below.

What are some possible labels for the horizontal axis?

Choose at least four measurement points on the horizontal axis. (What words are at the high points and what are at the low?)

What are some possible labels for the vertical axis?

Choose at least four measurement points on the vertical axis.

Now choose a partner in the group. Each pair will write a paragraph about what could have been happening in the life of a person whose life followed this pattern. Give him or her a name and an age.

Read your paragraphs aloud to the other people in your group and a teacher. Look at the graphs while you listen.

What are the labels on the horizontal and vertical axes?

What happens in the story that fits the high points on the graph?

What happens in the story that fits the low points on the graph?

When you finish, each person in the group does the following alone, but should ask for help if he/she needs it. You will need a piece of graph paper and a piece of lined paper.

Look at the graphs at the beginning of this activity. Think of your own life and a period of time you would like to write about that shows a pattern. On graph paper, draw a graph of that time period. Label the vertical axis. Label the horizontal axis. Give the important measurement points on each axis. Then write a composition which shows how your life so far, or an important part of your life, fits that graph. Be prepared to explain the graphs and stories of the other people in your group as well as your own.

The Paw

*Chairperson:*_____
Reporter: _____
*Recorder:*_____
Helper: _____
Date Completed: _____

In physics and math lab you have worked on an experiment with a balance beam. In the experiment, you used a paw to measure instead of a ruler. The paw is a drawing of a large animal footprint. Why did you do this?

Would it matter if people today used a paw instead of a ruler? Why or why not?

Now we are going to imagine that long ago, in another time and place, people used the paw to measure everything from houses to cars. We are going to write a legend that explains how people got the idea of using a paw to measure. Remember these people have probably never measured anything before. Before you write, you need to think: Why do people in the story you are writing use the paw measurement instead of, for example, the length of a person's hand? The story will be **fantastic**. There can be real or imaginary animals or people in it. You can write the legend yourself or with a partner. Use the following paper as a checklist.

The beginning sentence should be: "Long, long ago in my country there lived. . . ."

The legend should explain what happened that caused people to use a paw to measure things.

The last sentence should be: ". . . and this is how the paw became the ruler in the land." (Ruler here does not mean king. It means a unit of measurement.)

In order to finish the activity, you will also have to draw a picture of an important part of the story. If there are imaginary creatures, be sure to include them in the picture. This can be drawn at any time during the writing process when you have extra time.

Checklist

As you complete each part of the assignment, check off what you have completed. The first time you write the story, don't worry about mistakes, just try to get all your ideas down.

First draft_____

If you feel you have finished the first draft, you need to look for a way to get ideas on how to make the legend clearer and more interesting. Before writers finish something, they share it to make sure the story is clear. That is what you are going to do. You will share your legend with at least two people in your group. Each of them should write down four questions or suggestions they have. These questions should ask for more information to make the story clearer, or more interesting, or more detailed, or more imaginative. You will do the same thing for them.

First reader_____
Second reader_____

After you have gotten **feedback** on your first draft, it is time to rewrite. Look at the questions that people asked you. Choose at least five good ones to answer. Put the answers to those questions in your composition. This will be your second draft. You can do this by hand or you can rewrite it on the computer. If you want to use the computer, talk about it with your chairperson and the rest of the group. Make sure that no one needs you for feedback. Then you can sign out and go. Before the period ends, bring back a print of the work you have completed so far.

Second draft_____

Now that you have finished your second draft, you are ready for a different kind of feedback. This time people will read your legend and make corrections for spelling, punctuation, and grammar as well as anything that is unclear. Make sure the person **proofreads** carefully.

Proofread_____

After you have had your Second draft proofread, it is time to make final corrections on the computer. Correct and print.

Third draft, corrections made_____

Hand in your first draft, a copy of the questions, your second draft with proofreading marks, and your final draft. Put the finished copy on top. Label all drafts. At this time, the teachers will proofread and make final corrections. When

this is given back, it is up to you to make all final corrections and get this ready for publication.

Final copy_____

Picture_____

for The Teacher

Rolling Ball/Floating Glider

Activity Description:

Students are introduced to the concept of constant speed. They also develop an intuitive understanding of the slope of a line and how the inclination of a line provides the speed of an object. Newton's first law is introduced.

Science and Mathematics Concepts and Skills:

- Constant speed
- Slope of a line
- Averages
- Error
  - systematic and random

Mathematics Concepts and Skills:

- Graphical analysis
  - Draw and interpret graphs
  - Best-fit line

Science Concepts and Skills:

- Friction
- Newton's first law

Although this activity is not particularly difficult and the instructions are complete, students often have trouble collecting data for their first distance vs. time graph. What makes the acquiring of data difficult is that the data must be collected in a single roll. Usually, one student keeps track of time by announcing each time interval while another follows the ball down the track marking, in some fashion, the position of the ball at each second. It is preferable to have five or more data points. If there are not enough points, students are probably rolling the ball too fast (or have chosen a big time interval). Before continuing, make certain they graph their results. The data points should fall in a fairly straight line. Encourage students to draw best-fit lines, not to connect the points. The activity *Graphing Results* deals with this issue in detail.

Similarly for the fast and slow roll, the students should collect five or more data points. The problem typically arises with the collection of the "fast" roll data, if their "slow" roll was fast to begin with, or their time interval was too large, they will not have enough data points. They will have to adjust accordingly.

Students should be introduced to the concept of slope. At this time, it is not necessary for them to learn how to calculate slopes, but they should realize that the slope of a line refers to the steepness or inclination of a line. Also, it is important that they compare the slopes of best-fit lines for the fast and slow pushes. The slope of the distance vs. time graph gives the speed. In this case, it is the average speed of the rolling ball. If some students are familiar with calculating slopes, then by all means, have them determine the slopes of the lines. Their slopes should agree with the calculated speed averages for each case.

Debriefing:

Review the purpose of the activity. Discuss some of the different ways they collected data. What worked best? Students should understand the connection between constant speed and the straight line of the distance vs. time graph. In addition, see if students understand that the steepness of a line is related, in this activity, to the magnitude of the speed of the ball. Students should be able to state Newton's first law in their words. This is the time to discuss the role of friction in this activity. Why did it take so long to discover this law?

Rolling Ball Floating Glider

*Name:*_____
Partners: _____
_____
_____
Date Completed: _____

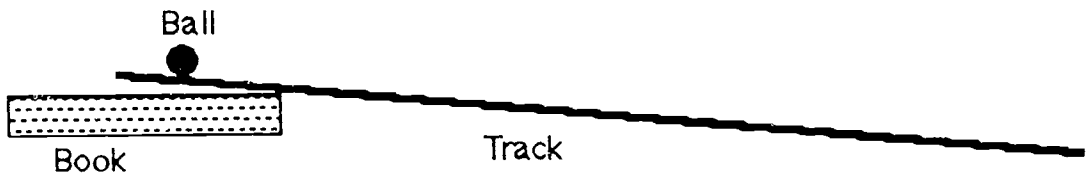
Activity Description

In this activity you are going to study carefully the motion of an object moving with constant velocity. This means that it moves without speeding up or slowing down. You are going to make measurements of distance and time and graph the results.

This activity may be performed with a rolling ball on a ramp or with a glider on an air track.

Procedure:

Try the following. Give the ball a small push.



Describe the motion of the ball.

Why does this happen?

Now try this, and give the ball a push at the bottom.

Describe the motion of the ball.

Why does it slow down?

Adjust the track so that the ball rolls along the track evenly, smoothly, and at a constant speed. **The ball should not speed up or slow down as it travels along the length of the track.** Try it a few times. This is an example of **constant speed.**

If your track were **very** long and the ball did not speed up or slow down, what would happen to the ball?

You have just discovered Newton's first law of motion, which states that **an object in motion will continue in motion in a straight line until a force causes it to change this motion.**

Try placing your ball on the track at rest. This means with no push. What happens?

This is the second part of Newton's first law: **an object at rest will remain at rest until a force acts on it.**

The rate of motion of a ball traveling along the track is called its **speed**. To determine speed with accuracy, we must measure both the distance it travels and the time it takes to travel the distance.

Set up some way of measuring time intervals. The easiest way is to use a stop watch that measures seconds.

How long does it take for the ball to reach the end?

Time 1	
Time 2	
Time 3	
Ave. Time	

Push the ball slower and then faster. With each trial measure the time.

	Slower Push	Faster Push
Time 1		
Time 2		
Ave. Time		

What pattern do you notice?

Measure the distance the ball rolls in **two** seconds.

The time units are_____. The distance units are _____.

	Distance (cm)
Trial 1	
Trial 2	
Trial 3	
Ave. Distance	

Push the ball slower, then faster. Describe the effects on the distance traveled by the ball.

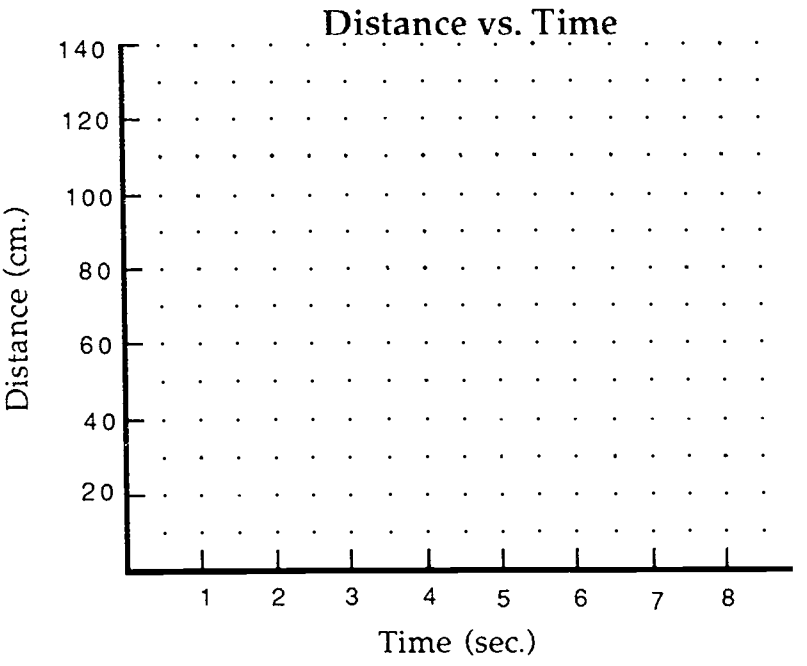
Push the ball slower, then faster. Describe the effects on the distance traveled by the ball.

In order to determine the speed of an object, you must know both the distance the object traveled and the time it took to travel this distance. (Speed is a rate. It is the ratio of distance to time.)

$$Speed = \frac{Distance}{Time}$$

In the next part you will need to keep track of the distance traveled by the ball at each time interval. ***The distance markers must be placed on a single roll. Discuss this with your partner and practice it a few times. When you feel confident, show your method to an instructor.***

Time (sec.)	Distance (cm.)



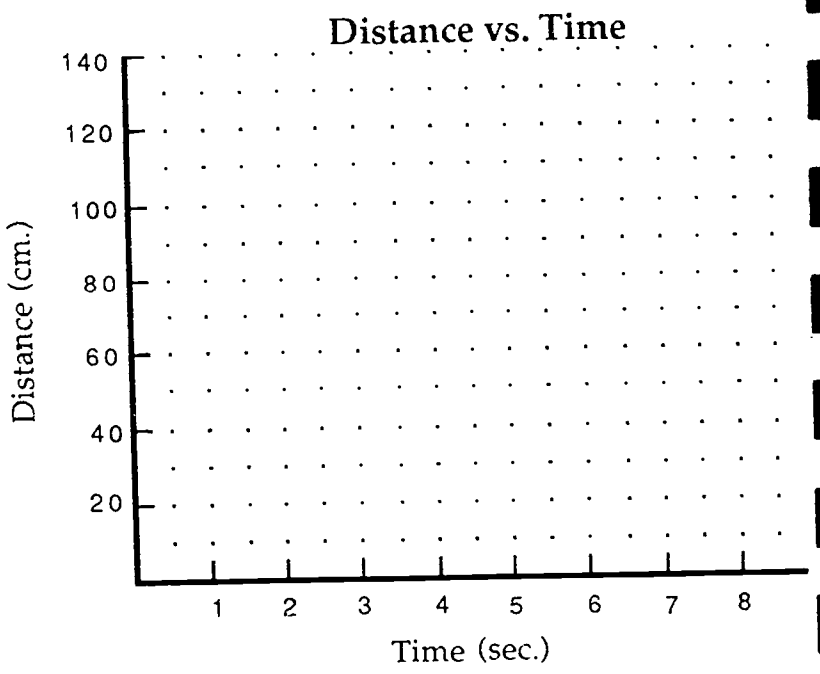
What do you notice about the graph? Discuss this with your instructor before continuing.

The average speed of the ball is equal to the total distance divided by the total time. What was the average speed for your ball using the data above? Show your work.

Take data for a very slow roll and a relatively fast roll. Make a data table and a graph for each roll.

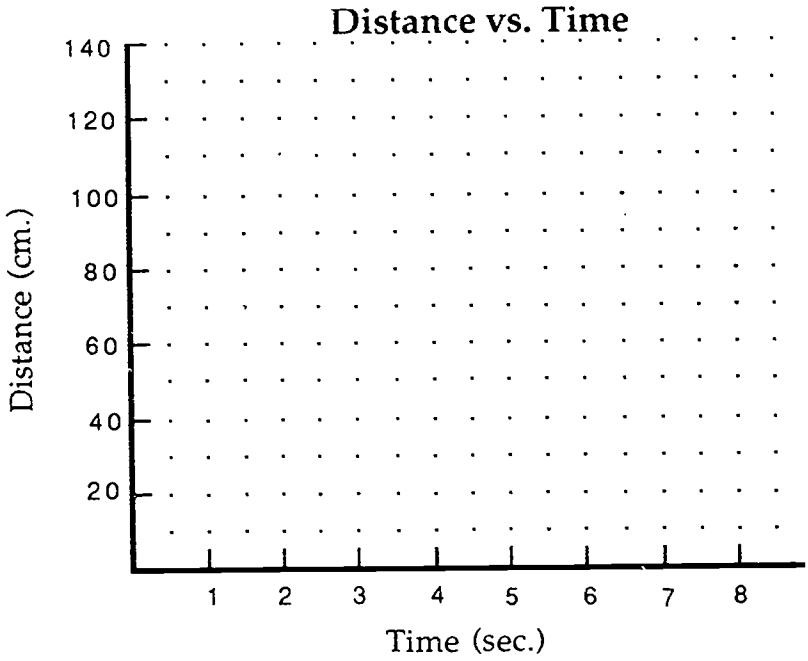
Slow Roll

Time (sec.)	Distance (cm.)



Fast Roll

Time (sec.)	Distance (cm.)



What pattern do you notice about the slope of the lines above? *The slope is the steepness or inclination of the lines.*

For both of the above trials, calculate the average speed. Show your work below.

What conclusions can you draw about the graphs of constant speed? (Summary)

Mastery Activities/Questions

Make a graph of your data using the computer.

When the ball is rolling at a constant speed, what do you notice about the distance traveled during each period? (the spacing between the markers)

Why does the distance vs. time graph of a constant speed make a straight line?

How is the slope of the line related to the speed of the roll?

State Newton's first law in your own words.

for The Teacher

Graphing Results

Activity Description:

This activity is designed to assist students in choosing the appropriate way to draw a curve on a graph once they have plotted the points. Students are led to consider experimental error. This activity should immediately follow *Rolling Ball/Floating Glider.*

Science and Mathematics Concepts and Skills:

- Graphical Analysis
  - best-fit line
  - best-fit curve
  - error bars
  - slope
  - interpretation of graphs
- Error
  - systematic and random

Students almost always simply connect the points in order to complete a graph. At first, in the Rolling Ball experiment, it may be sufficient to have them use a ruler to make their straight line. This activity considers that act more carefully.

It is an important and subtle step from a simple graphical demonstration of experimental results to one that shows the data, projects a model of the relationship (the best-fit curve), and also gives an indication of experimental accuracy (error bars).

In the Rolling Ball experiment, random sources of error include: reading the timer, marking the position of the ball, starting the ball rolling at time zero. The randomness is in the randomness of their reaction times, concentration, etc. It is possible that if a group practices really well and does the experiment carefully, they may still have systematic errors. The graph may not pass through zero. Synchronizing the clock with the start of the roll will be different for each group, depending on who gives the signal. The graph may not pass through zero. Use your judgment and knowledge of the group to decide how deeply to probe this with students.

Just when we have convinced students to draw a line through points, we give them an example where a best-fit curve is more appropriate. The same repeatable results that show a distinct pattern must be explained. In this case, the ball is

speeding up and slowing down due to a curve in the track. Let students figure this out on their own by simply asking, "What could cause this to happen?"

In these materials, we often ask students to draw graphs with computers using regression lines. That is the terminology of the software writers. In our notes for teachers we often use best-fit line, etc. You can make the judgment to use a single terminology or expose students to a variety of terms.

Debriefing

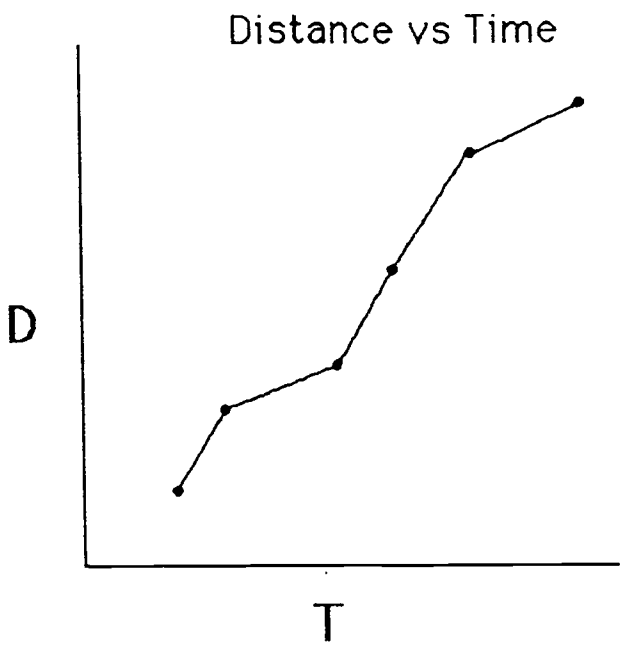
Students should be able to explain why points often do not lie on the line. They should be able to see that the line is our best model of what the ball is really doing. They should be able to articulate when it is appropriate to draw a straight line and when it should be a curve. The slope as the ratio of changes should be discussed. How did they know that the ball speeded up and then slowed down?

Graphing Results

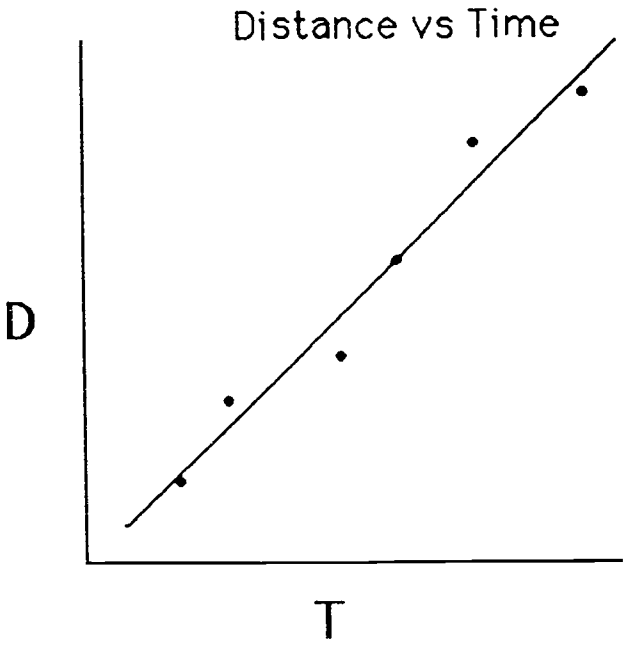
*Name:*_____
Partners: _____
_____
_____
Date Completed: _____

The following are typical graphs of data from an experiment such as you did in class with the rolling ball. In answering these questions, it will be helpful to think about the differences between what you saw, what you measured, and what the ball actually did.

Graph A



Graph B



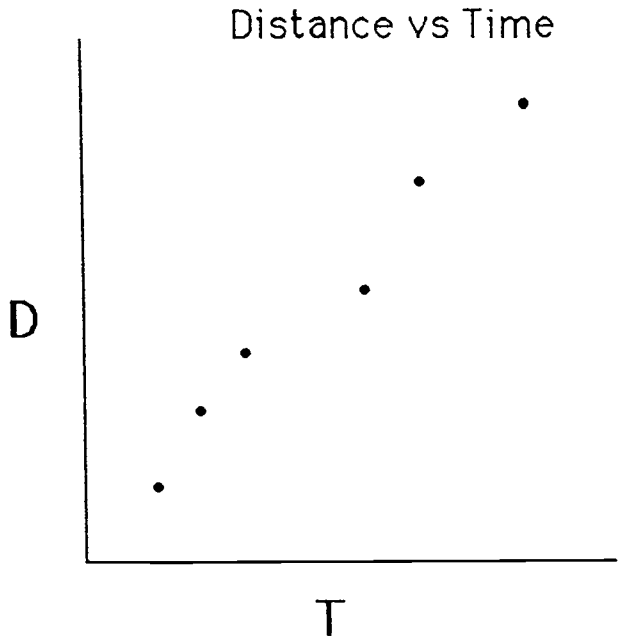
Which graph best shows what the ball is doing? Why?

What does the straight line represent?

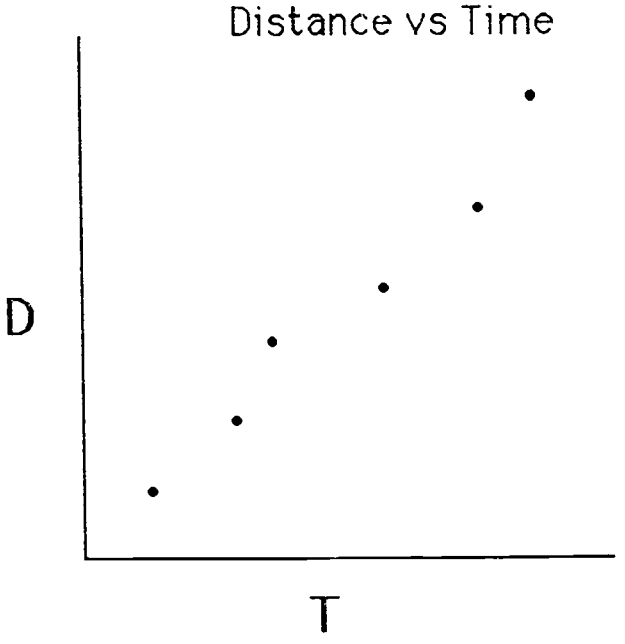
What does the line in graph A represent?

Two more tries yield the following results:

Graph A



Graph B

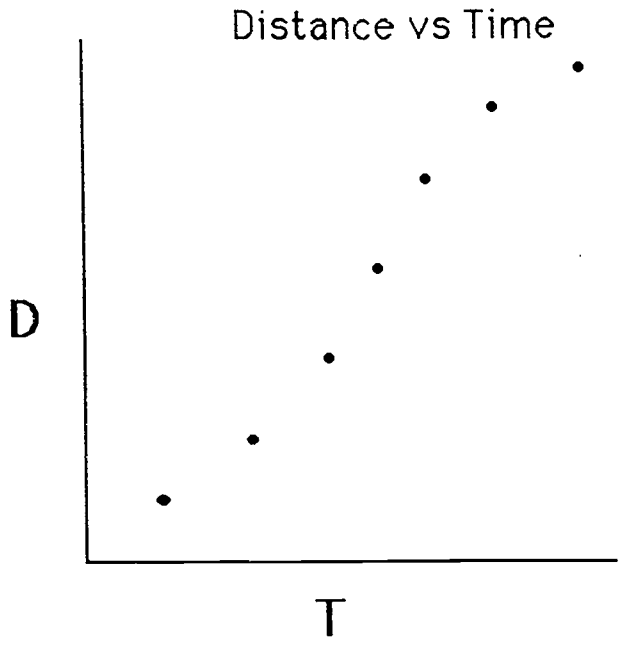


Draw the straight lines on the graphs for this data.

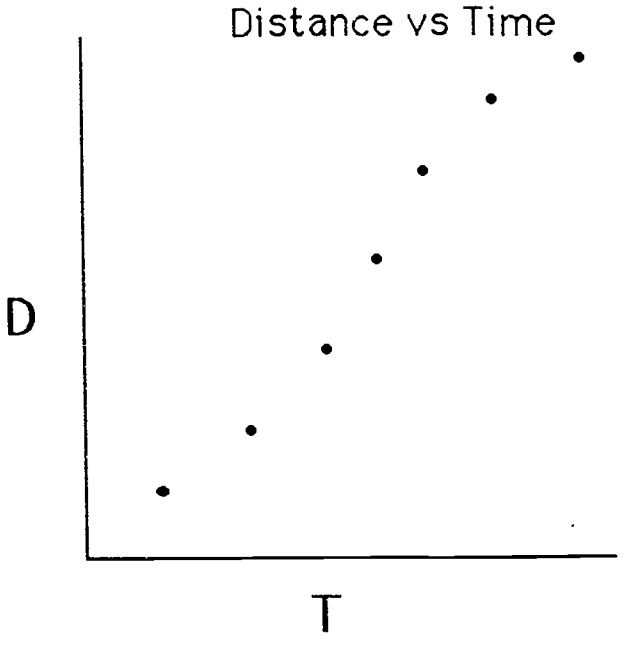
Why are some points off the line?

A group decides to practice this really, really carefully and practices until they are really, really accurate. They find the following results.

Graph A



Graph B

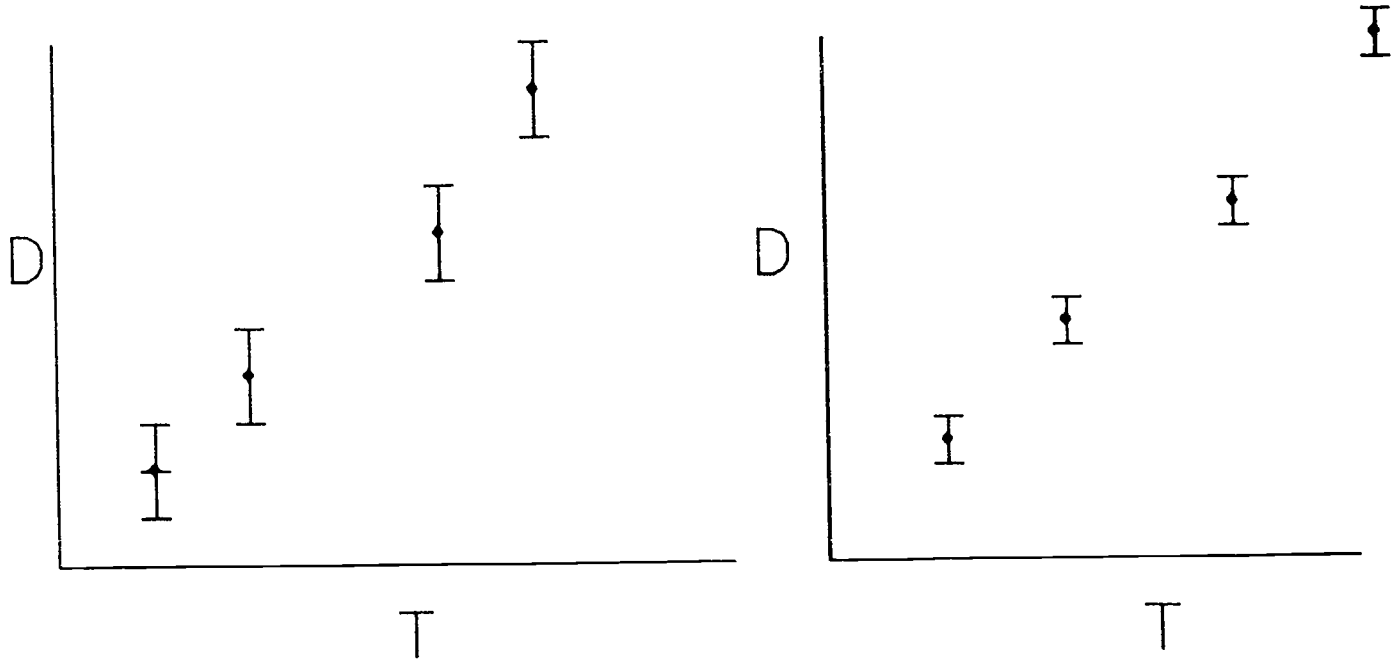


What would be the best way to connect the points for these graphs?

Draw it.

How can you explain the pattern that you find in the graphs?

Scientists have developed a way to show experimental error on a graph, using error bars. It indicates to us how accurate our measurements are.

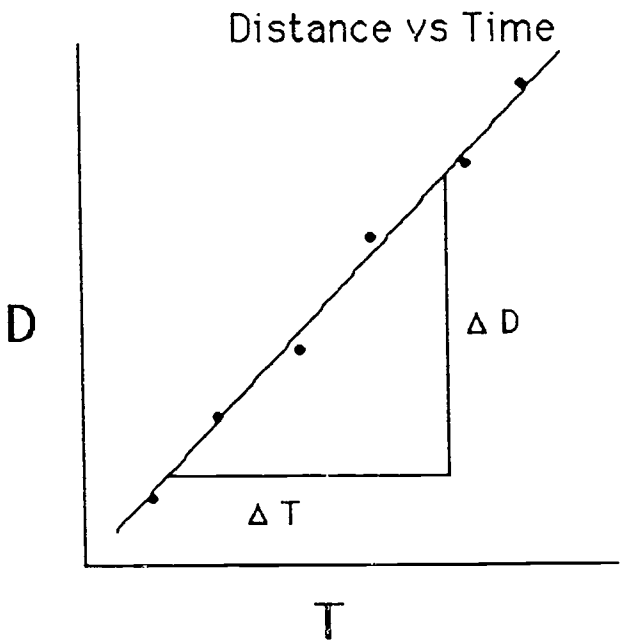


Each bar shows the range in which we could reasonably expect our measurement to be. Which graph shows a more accurate experiment?

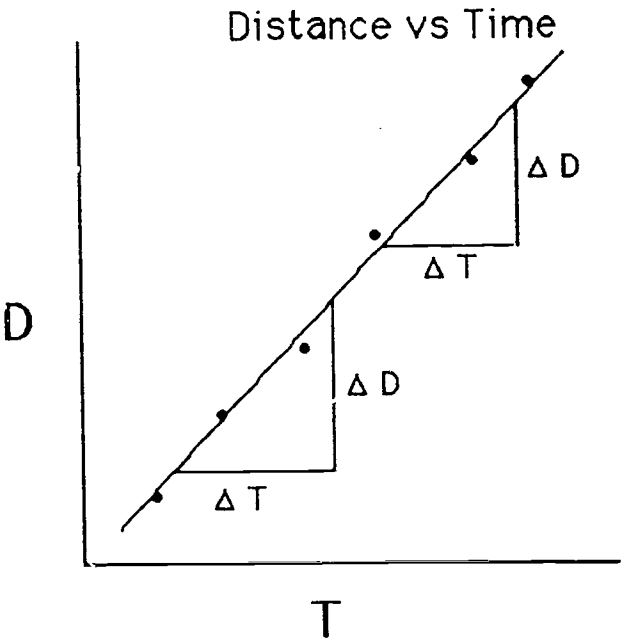
Draw a straight line on both. Could both graphs describe what the ball is actually doing? Explain.

Students take the slopes of two graphs as follows:

Graph A



Graph B



With a ruler, measure the ΔT and ΔD for each of the triangles above. The slope is the change in D (ΔD) divided by the change in T (ΔT). Find the slopes. Show your work below.

What do you notice about the answers?

What does the slope represent or tell us?

for The Teacher

Mystery Containers

Activity Description:

Students determine the number, type, and mass of coins in each of the mystery containers as well as the mass of the empty container. The coins are placed in at least six containers (film containers make great mystery containers). Each container has a different number of coins, however the coins must be of the same type, and the number of coins increase by one from the first to last container. The containers should have no markings. The concept of slope of a line and y-intercept are investigated extensively.

Science and Mathematics Concepts and Skills:

- Units
- Graphical analysis
  - calculation of slopes
  - physical interpretation of slopes
  - y-intercept and interpretation
  - interpolation
  - extrapolation
- Error
  - systematic and random

Mathematics Concepts and Skills:

- Linear equations
- Writing and manipulating equations

Science Concepts and Skills:

- Quantum behavior

Briefing:

Students must complete the activity without opening the mystery containers.

Students sometimes do not put the containers in order from lightest to heaviest; it will become apparent when they graph their data. When you make the containers, check both the masses of the containers and the masses of the pennies to be sure that they are all reasonably the same. The graph (container vs. mass) will then be linear. The mass of the coins is given by the slope of the line and the y-intercept is the mass of the mystery container.

Students will need to calculate slopes and y-intercepts and provide an interpretation for each. Encourage them to review with each other without your assistance. When writing linear equations students frequently mix the dependent and independent variables. Having students write linear equations with different coin masses and container masses can help reinforce these concepts.

Debriefing:

One of the most fun parts of this activity is the moment of truth when the mystery containers are opened and the students check their results with reality. It is equally valid to leave the containers sealed. In physics, it is often impossible "to open the container".

Have the students describe their procedure. Can they explain what the slope and y-intercept represent? Can they write different linear equations? Some groups should present their results to the entire class to reinforce these concepts.

Mystery Containers

*Name:*_____
Partners: _____
_____
_____
Date Completed: _____

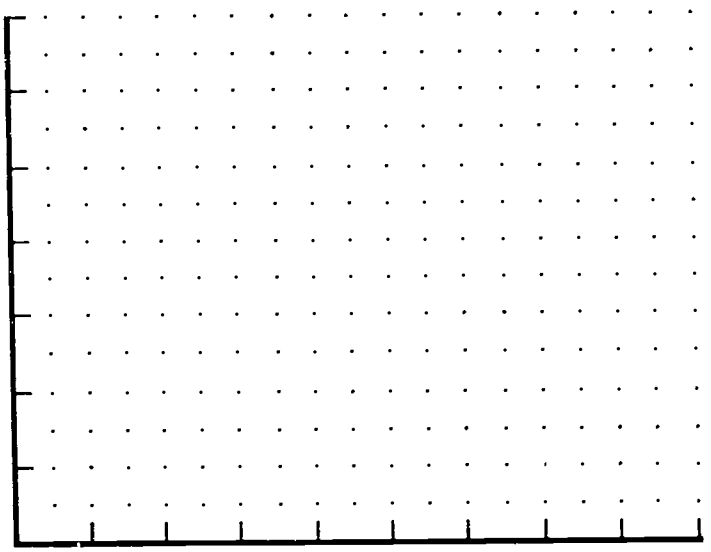
In this activity, you will determine the number of coins in each of the mystery containers, the kind of coin, the mass of the coins, and finally the mass of the mystery container itself. **You must do this without opening the container.** That is the challenge!!! The six mystery containers have different numbers of coins inside each one. All of the coins are all of the same kind. They are pennies or dimes or nickels, not combinations.

Procedure:

Place the containers in order from lightest to heaviest. Weigh each container carefully and complete the chart below.

Container #	Mass (grams)
1	
2	
3	
4	
5	
6	

Graph your data with the Container # on the x-axis and the Mass on the y-axis.



Study your graph carefully. Describe your graph. Is it linear, etc.?

From your graph, can you determine the number of coins in each container, the mass of each coin, and the mass of the mystery container itself? If you can do this with the help of your partners without turning the page, do it. Explain how you found the answers from the graph. Attach your explanation on a separate sheet of paper.

Helpful Hints:

What does the increase in mass from container to container represent?

Calculate the slope of the line. Show your work. What information does this give you? Explain.

What kind of coins are in your mystery containers? **Do not open them.** How can you find out?

Can you find the mass of the containers by using your graph? Explain. (If you are stuck, go to the hints below.)

Why doesn't the graph go through zero?

Where does the graph cross the y-axis?

This is called the y-intercept. What does this number represent?

What would the mass of the next container in the sequence be? Explain how you got the answer.

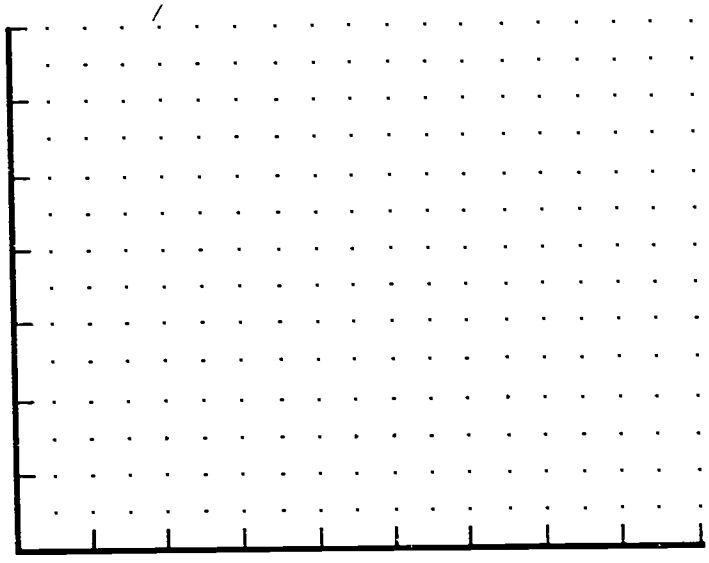
Write a statement about the mass of a mystery container. Write it both in words and also as an equation using symbols.

How much mass would a container with 14 pennies have? Show your work below.

Write a mathematical statement which would work for the same containers, but having nickels instead of pennies.

Write a mathematical statement which would work for pennies with a container which weighed twice as much as your mystery container.

Make a graph below of a similar but different experiment using coins from the land of the Paw and see if your partners can tell you the mass of the coins and the mass of the containers.



Have the person write the equation for the line.

Mastery Activity/Questions:

How could you find out about the mystery containers in space; i.e., in a weightless environment?

Use the computer to graph your data. Use a regression line and statistics. Explain what the numbers at the top of your graph tell us.

How do you write an equation of a linear graph?

for The Teacher

My Ruler

Activity Description:

Students construct their own measuring stick with the *Paw* (1 Paw = 20 cm) as the basic unit of measurement. The paw, English and metric systems are related and compared to each other.

Science and Mathematics Concepts and Skills:

- Errors
  - systematic
  - addition of
- Distance units of measurement
  - comparison of units
  - Metric and English
- Fulcrum

A drawing of an animal print that just happens to be 20 cm in length should be placed at several places around the classroom. Students will need wood to construct their measuring sticks. The wood stock can be purchased in your local lumber store. Some smaller pieces of wood 20 cm in length should also be made available for groups. A stable see-saw can be constructed with a plank and a dowel which has been cut in half.

Students ultimately design a meter stick, but first they familiarize themselves with the paw as a unit of distance. This is accomplished by having the group *play* with a seesaw and make measurements using the paw. Students should exercise caution when on the seesaw.

Students eventually will have to divide the paw in some fractional manner. A piece of paper that is folded in half can provide an accurate way of calibrating the paw in fractions. Dividing the Paw in decimal units is not so easy.

After the students construct their meter stick it is important that they use it to measure a number of different objects, preferably outside the classroom. It is an opportunity for them to reinforce the main concepts of the activity and at the same time have some fun.

When students find the average height of their group in fractions, they usually comprehend the advantages of using a decimal system as opposed to an English fractional system.

Debriefing: Use the Mastery Questions.

My Ruler

*Name:*_____
Partners: _____
_____
_____
Date Completed: _____

In this activity you are going to create a ruler with unusual units and explore ways of making the ruler a more accurate and reliable measuring device.

Procedure:

Fulcrum

Measure the length of the plank. Use the length of the paw as your basic unit for measuring. Length _____ (Write the units after the number.)

Place the dowel under the plank at the midpoint (see diagram). Measure the distance from one end to the fulcrum._____

Have one student stand halfway between the fulcrum and the end of the plank. Measure this distance from the end to the student. _____

Distance between fulcrum to the student: _____.

Try to balance the plank by having another student stand on the opposite side of the fulcrum. When you balance the beam, measure the distance to the second student from the fulcrum. _____

Why are the distances from the fulcrum to the two students different? Can you think of an explanation for this?

For this next part, you will need to measure accurately. Can you think of a way to subdivide your paw to make it more accurate?

Try different combinations of people in your group and record the results below.

Name Weight	Distance to Fulcrum	Name Weight	Distance to Fulcrum

What is the pattern?

How could you use this idea to enable you to lift a very large animal which weighs one ton? (1 ton = 2,000 pounds) Draw or describe how this could be done.

Using the wooden stick with the paw as your main unit, create your own ruler.

How many paws long is the wooden stick?_____

Measure the lab table with your new measuring stick. Record its dimensions.

Is the lab table an integral number of paws? Is it exact or do you have some left over? Explain.

What can you do in order to make your measuring stick more accurate so that you can measure smaller lengths?

Subdivide each paw on your measuring stick so that you can measure things more accurately. On one side of your stick, subdivide by fractions. 1/2, 1/4, 1/16, etc.
On the other side, subdivide it into ten parts for each paw.

Measure your height and the height of your partners twice, once with fractions and once with decimals. Record your measurements in the following table.

Name	Height (fractions)	Height (decimals)

Find the average height of the members in your group by using the fractions and also by using the decimals.

Average Height (fractions)_____ Average Height (decimals)_____

Measure the perimeter of a sheet of paper._____

Using your new measuring stick, measure five other things. They must be a combination of things, persons, or distances.

Compare your measuring stick to a meter stick.

How many paws are there in a meter?_____

What is the main unit of the meter stick? _____

What is the smallest subdivision of a meter stick?_____

How many centimeters in a paw?_____

Mastery Questions:

Can you think of some reasons why scientists always subdivide their units by 10's?

What is a unit?

Why is it always important to include the units when we write or read a measurement?

What are we doing when we take a measurement?

Project Adventure

The day in Motion ends in an explosion of energy with students performing feats of physical and mental gymnastics. Visitors fortunate enough to visit the Project Adventure part of *The Motion Program* near the end of the course have the opportunity to see an educational miracle.

Imagine going into a gymnasium where there are twenty-four students grouped around three different climbing elements. Two blindfolded students are climbing up a series of railroad ties suspended from the ceiling, spaced about four feet from each other. Students must coordinate their climb in order to keep the moveable ties in balance. Each of them is connected via a harness to a safety rope which is being belayed (supported) by another student who is supported by yet another student. A student is swinging from a set of six rings suspended twenty-five feet above the ground. There is a group of students gathered around as one is climbing up the side of the gymnasium wall to a small platform mounted to the wall fifteen feet above the ground. There is a trapeze suspended far enough away so that a monumental leap will be required to grasp it. As the person confronts this situation, the fear, the hesitation, the encouragement from their friends, and the care of the person who holds the safety rope, are very real. Whether the student climbs down from the platform, jumps and catches the trapeze, or jumps into empty space to be saved by the safety rope, he or she is greeted at the bottom with hugs, support, laughter, consolation, encouragement, and congratulations from peers.

It is a moving sight to see students supporting each other to do things that are physically, mentally, and emotionally challenging. Their faces sometimes show fear, sometimes laughter, sometimes tears. They are willing to place themselves in situations where they can explore their limits without fear of judgment. Students consistently point to Project Adventure as a high point in *The Motion Program*. As a result of these experiences and the confidence they develop, students express themselves more easily through writing in the literature class and they have the collaborative skills necessary to carry out sophisticated experimentation in the physics lab.

How do you move a group of students to this stage? The miracle happens in carefully orchestrated stages. The beginning involves games and activities, de-inhibitizers, which allow students to be comfortable with each other. Coming into the gym at this stage you might see students in a circle throwing frizbees, rubber chickens, and tennis balls to each other as they learn names. You might see students running about the gym in yet one more variation of a tag game. You might see them sitting in a circle talking about a conflict that happened during the day.

As the term unfolds, there is a shift to solving increasingly difficult problems as a group. At this stage you might see students trying to form exact squares with rope while blindfolded or boosting a person horizontally through a small opening four feet off the ground. You may see students attempt to swing from a ladder to a

platform across an imaginary lake with three thousand savage alligators swimming in boiling oil.

The next stage involves trust-building activities. Students do activities in which they make their bodies rigid and allow themselves to be moved and supported by a circle of other students. They learn to catch each other in falls. They allow their bodies to be supported horizontally, lifted, moved, and placed on the floor.

It is during the climbing stage when all of these skills come together. The de-inhibitizers allow them to try, the problem solving allows them to think strategically, the trust teaches them individual and group responsibility. Throughout the day similar values govern the learning community, supported by a contract negotiated in Project Adventure. The miracle, as it turns out, is a group of students and teachers working together to solve bigger and bigger problems in a context that is supportive and fun.

Project Adventure Goals

The Project Adventure learning goals are to:

- increase the student's sense of personal confidence
- increase mutual support within a group
- develop abilities that contribute to group decision making and leadership
- foster appreciation and respect for differences existing within a group
- develop an appreciation of the interdisciplinary nature of real problem solving
- increase ability, physical coordination, and joy in one's physical self

Each class begins with a briefing, a description of what activities will occur. This is followed by the activity itself, either a game, a problem-solving initiative, a trust activity, or climbing an element. The class concludes with a debriefing, a review of what happened during the activity. Debriefing involves reflection, communication, and discovery. Students involved are encouraged to express their feelings about themselves, each other, and the instructors. Students are provided with the opportunity to present their feelings through both group discussion and a daily journal. The debriefing can be powerful.

It's up to the instructors to lead students through confrontation of fears and anxieties, discoveries about self, analysis of group interactions and performance, as well as anything else that may surface. Typical questions are:

- How do I feel about what I did today?
- Am I moving toward achieving my term goals?

- Was I supportive of the group?
- Was the group supportive of me?
- How do I feel about what I am accomplishing?
- What doubts and fears do I have?
- What problems am I encountering?
- What can I do next?
- How can the group help me?

Activities

The sequencing of activities plays a major role in the Project Adventure experience. Following an adventure-based curriculum, the class "travels" through activities including: cooperative warm-ups, non traditional group games, trust activities, communication activities, decision-making and problem-solving activities, and finally culminates in the challenging ropes course.

Many of the activities are designed to heighten levels of anxiety and frustration, putting each student at risk physically and emotionally.

Icebreakers

Icebreakers provide opportunities for class members to get to know each other and to begin to feel comfortable with each other through activities and games that are primarily fun, non-threatening, and can be performed together. Fun is the key element. Icebreakers can include any type of low-level skill "tag game" such as running or dodging. ***Everybody's It***, which has been billed as the world's fastest tag game, is an example. There are two rules: everybody is It and when a player is tagged he/she must sit down immediately. The game starts with everybody looking around and realizing that every other player is the enemy. The instructor then asks, "What's the name of the game?" When the students reply, the game starts and quickly ends.

De-inhibitizers

De-inhibitizers include activities that make students feel comfortable by getting everyone to laugh, act silly, and just plain enjoy being together. Students begin to take some risks by being willing to appear inept in front of others which may lead to some feelings of discomfort and frustration. Success and failure are less important than trying and making a good effort. Fun activities allow students to view themselves as more capable and confident in front of others. The atmosphere is one of support and cooperation which tends to encourage student participation and increase confidence. *Yells* is an example of an activity in this category. The class sits in a circle and imagines being on an outing in the wilderness. They are told: *You are out gathering wood for a fire and become separated from the group. You discover you are lost. It is getting dark and you must now yell for help to get someone's attention.* The instructor sets the tone by giving an enthusiastic yell for

help before each student takes a turn until they completely go around the circle, each student trying to yell louder than the previous student.

It is crucial to let students know early on that you would never put them in a situation that you haven't personally experienced. Let them know that whatever you ask of them you have done before and would not hesitate to do again. You must be an active participant in all activities. As a result of these activities and your participation, students begin to relax and enjoy each other in the Project Adventure setting. They become more comfortable working together in the gym. This carries over to their academic classes as students feel increasingly more at ease in the collaborative learning environment.

Trust Activities

Trust activities provide the class with opportunities to trust their physical and emotional safety to others. Activities involve the support and cooperation of students in caring for safety of others. Risk taking occurs at many levels with trust gradually developing within the group. Trust activities begin with *Spotting* and *Trust Falls* which provide the class with the experiences of falling and catching in a carefully controlled setting. Spotting involves having one or more individuals in a position to prevent an off-balance participant from falling. Spotters must learn to recognize that this means supporting the upper part of the body, head, neck, and back. Spotters must constantly focus their attention on the performers and attempt to anticipate their movements. The sequence begins with the act of falling back into another person's arms, proceeds to falling in a circle of people, and ends with falling backwards from a height into the arms of classmate spotters.

Many excellent trust activities may be found in the Project Adventure publication cited at the end of this section.

Communication Activities

Communication activities involve the class in physical activities that demand verbal or nonverbal communication, and active listening. Group cooperation is essential; decision making occurs and, while frustration levels run high at the beginning, leaders soon emerge. An excellent communication activity is *Blindfold Square*. The object is for a blindfolded group, to stand in a circle holding a rope, and then to form a square or triangle configuration using the rope to establish the boundaries. No one may let the rope leave their hands for more than five seconds at a time. The group must decide when they think the figure is correct. Then they may remove their blindfolds. A variation would be for the class to find the rope ten feet or so away from the group. Certain rules can be included such as: no running, walk only with hands in bumpers-up position, set a time limit to complete the task, and no verbal communication until the rope is found. The beauty in many of these activities is that they can be used over and over again with slight variations and they can still be challenging and fun.

The Contract

Contracting is a key element in the Project Adventure experience. The Contract is an agreement that students are asked to make that establishes the behavioral goals of the class. The instructors gradually ease students into the concept of formulating a contract by explaining and discussing contract ideas during the first two weeks of class. Fundamentally, most societies, communities, schools, and families have a set of rules under which they operate.

The contract can consist of anything the class feels is necessary to include. This gives the class a sense of ownership. The contract is then presented to the other teachers in the program and, after any revisions, is signed by all. If the guidelines of the contract are not followed, any student or teacher in the program can refer to it and remind everyone of their commitment and agreement to follow the guidelines. This serves to unify the program and adds to its interdisciplinary nature.

Sample Contract

I, _____, as a member of the Motion class agree to:

1. **respect the other students**
2. **consider others' safety**
3. **help and support others**
4. **try always to communicate in English**
5. **share my ideas with others**
6. **always try to do my best - never give up**
7. **take time to discuss my assignment or task with the group**
8. **listen to others while they are talking**
9. **be prepared for every class and be on time**
10. **participate in all activities**
11. **trust others and be responsible**

If the contract is broken, the group is responsible to talk to that person and help him or her.

Signature_____ Date_____

Decision Making and Problem Solving Initiatives

These activities give the class the opportunity to communicate, share ideas, compromise, plan, and strategize. These problem solving initiatives range from the simple to the more complex. Here is the chance for the class to share ideas and rely on previous experiences to solve problems that are fun, contain a level of risk and frustration, and may be physically challenging. *Spiders Web* is an excellent example. The object is to move an entire group through a giant nylon rope web without touching the web material. To make the activity more challenging, inform the class that a body may pass through a web opening only once. You should have at least as many web openings as there are bodies to pass through. Our web is strung between two volleyball stands. Another challenge is to put a time limit on the activity which adds a considerable amount of frustration which leads to an interesting debriefing.

The Ropes Course

The Project Adventure activity sequence culminates in the challenging high ropes course. Students must learn to tie various knots and use hardware specific to the sport before climbing. Once they are proficient in tying a rope into a safety harness called a *Studebaker Wrap*, they are ready to learn how to belay.

Belaying is a technique used in rope climbing, involving concentration and focus on the person who is climbing. The physical aspect of this is being the lifeline to the climber. The belayer maintains physical control of the rope. It is the belayer's responsibility to manipulate the rope so as to assist the climber, and to insure safety. The high ropes course is the proverbial icing on the cake. By this time in the course, levels of trust among the class should be high. Anticipation, excitement, and anxiety are up there on the Richter scale! Goals are set and reached, confidence begins to reign supreme, and group support is at an all-time high. Debriefings are lively, filled with stories of acts of heroism for climbers as well as belayers.

The cycle of activities leading up to and through the high ropes course inculcates in students a real, physical sense of responsibility for each other's safety. This in, turn, develops the trust and confidence that lead to successful completion of tasks and, ultimately, from physical risk taking to cognitive risk taking - a quantum leap. Skills learned in this adventure-based, experiential curriculum allow students to operate more efficiently and effectively as individuals within a group and collectively as a group in literature, physics, and math.

Origins of Project Adventure

The origin of Project Adventure lies in the Outward Bound program founded by Dr. Kurt Hahn in Great Britain. The program grew out of an idea by Dr. Hahn to expand leadership and support in groups. Project Adventure is an offshoot of this program. It was first brought to suburban schools and then modified for use in urban institutions. The belief is that it is possible to bring the wilderness, with all its inherent challenges and philosophy, into the city for the benefit of city kids. The

program has been successful in several schools in the Boston area, and has recently been introduced to several schools in New York City.

Most of what we do in our Project Adventure class follows Project Adventure Inc.'s Adventure-Based Counseling Curriculum, with a few adaptations. Our teachers have all attended Project Adventure workshops and have been trained in Project Adventure techniques and philosophy. Project Adventure encourages teachers to follow their model, but allows for a tremendous amount of flexibility, creativity, and modification. The following is a list of Project Adventure publications we have used and highly recommend:

Islands of Healing
Silver Bullets
Cows Tails and Cobras II
Bottomless Bag

All the publications mentioned above can be ordered through

Project Adventure
P.O. Box 100
Hamilton, MA 01936
508-468-7981
FAX: 508-468-7605

Portfolio: Motion Part I

(For a complete discussion of the portfolio process, see Chapter on Assessment in this Handbook)

Name:_____

Please indicate your attendance in each class, and the number of activities which you have completed, and the completed activities/projects which you are including in your portfolio:

Literature: Absences: _____ Latenesses: _____
Number of activities completed _____
Activities included in this portfolio:

Math / Physics: Absences: _____ Latenesses: _____
Number of activities completed _____
Activities included in this portfolio:

Project Adventure: Absences: _____ Latenesses: _____
Number of activities completed _____
Activities included in this portfolio:

Please write about your progress. Your portfolio will have both a personal statement and a part that demonstrates your mastery of the ideas in motion class.

Personal Statement:

A central goal in The Motion Program is for you to be aware of your personal strengths, areas of difficulty, and your goals. Your goals should relate to both strengths and areas of difficulty. In each of the following categories state your ***strengths***, your ***areas of difficulty***, and ***your goals***.

Language growth/communication skills
Strengths, Goals
Areas of difficulty, Goals

Working individually/individual responsibility
Strengths, Goals
Areas of difficulty, Goals

Working with others/your role in groups
Strengths, Goals
Areas of difficulty, Goals

Working with adults
Strengths, Goals
Areas of difficulty, Goals

Academic growth
Strengths, Goals
Areas of difficulty, Goals

Overall progress
Strengths,
Areas of difficulty,
Major Goals
What are you going to work on?
Discuss the steps you are going to take to accomplish these.

Mastery Statement:

Base your answers to the following on specific class activities and your readings:

How are the four classes of Motion connected? How are they different?

From your activities and readings in literature, give examples of how people or characters can be in motion in ways that are physical, emotional, and intellectual. Explain.

Chose **one** of the following:

Compare graphing lives in literature and physics/math. Explain how the graphs are similar, and how they are different. What do graphs show?

or,

What is point of view? How does it affect what is seen and how a story is told in literature or in real life?

When an object falls, describe its motion as carefully as you can: What happens to it? Why does it behave as it does? You may wish to use charts, graphs and formulas to explain the distance, velocity, and acceleration.

When we do experiments, we usually take measurements. What is a measurement? What are units? Explain how measurements have errors. When we make a graph of measurements, sometimes the curve doesn't go through all the points. Explain. What does the curve represent?

A scientist who studies fish goes to a small lake with a net. Describe a good procedure she might use to learn about the fish in the lake.

In Project Adventure, we are working to develop:
self-expression / sharing,
being comfortable with others / self-confidence, and
respect / trust.
Describe an activity which we have done to develop each area. Explain how each activity helped develop the skill.

How does the class contract support these goals?

How do these skills help you in your work in the other classes?

Use as many pages as you wish to answer these questions.
Please insert your personal statement, your mastery statement, and all activities listed on your cover sheet.

Evaluation Guidelines

*Reader's Name:*_____

The following categories and descriptions were generated by the Motion class to be used in self, peer, and instructors' evaluations. For a person to deserve an A in classwork or portfolio, they should be an A in most of the categories, not necessarily every one. For a person to deserve a B, they should be a B in most of the categories. They may be an A in some and C in some.

Classwork:

Attendance, lateness

A None except for emergencies
B 2-3
C 4-6
D 7-8
No Credit. 9 or more

Mark_____

The amount of work completed

Has completed _____ activities.
A 14-15 activities
B 12-13 activities
C 10-11 activities
D 8-9 activities
No Credit. not acceptable

Mark_____

Understanding of classwork

Can explain almost all of the work to others
A almost all of the time
B most of the time
C sometimes yes, sometimes no
D rarely, needs improvement
No Credit not acceptable

Mark_____

Working with others

Leader, supports others, helps others
A almost all of the time
B most of the time
C sometimes yes, sometimes no
D rarely, needs improvement
No Credit not acceptable

Mark_____

Concentration

Works on activities, does not fool around
A almost all of the time
B most of the time
C sometimes yes, sometimes no
D rarely, needs improvement
No Credit not acceptable

Mark_____

Communication growth

Progress in the ability to write, speak, and understand English, or consistent mastery
A excellent
B good
C fair
D poor
No Credit. not acceptable

Mark_____

Classwork Mark: _____

Portfolio:

Personal Statement: Explains clearly and completely.	**Mark_____**
Mastery Statement: Explains clearly and completely.	**Mark_____**
Gives specific examples.	**Mark_____**
Shows what the person has learned.	**Mark_____**
Is well organized.	**Mark_____**
Is neat and easy to read.	**Mark_____**
Explains the connection between classes.	**Mark_____**

Portfolio Mark: _____

Personal Comments:

Beyond this evaluation, please comment on strong points, areas for improvement, and personal reactions from working with the person.

Classwork: _____ *Portfolio:* _____ *Final Mark:* _____

Self-Evaluation: Considering my work in the class, I would rate my classwork as _____, my portfolio as _____, and my final mark as _____.

Peer Evaluation: Please have two fellow students read your portfolio, and include their reaction sheets. Summarize their comments below.

Faculty Evaluation: Please have two instructors read your portfolio, and include their reaction sheets. Summarize their comments below.

Grade Summary: Use A,B,C, D, or No Credit. Do not use + or -.

	Self Evaluation	*Peer Evaluation*	*Peer Evaluation*	*Faculty Evaluation*	*Faculty Evaluation*
Classwork					
Portfolio					
Final Mark					
Name					

Beginnings

Beginnings is an interdisciplinary program designed to offer students who are new to the United States and to the International High School a coherent, full-day program which stresses linguistic and cognitive development in a supportive environment.

Students in the *Beginnings* program take the following classes:

> *Orientation to School and Society*, a communicatively based English as a second language class
>
> *Personal and Career Development 1* is the first course in the occupational education sequence. *Personal and Career Development* students explore their goals, ambitions, backgrounds, abilities, and career possibilities. They also select their first internships, experiences in which students have the opportunity to practice their English language skills in real job situations ranging from computer offices to hospitals, from classrooms to drafting rooms.
>
> *Introductory Biology* studies the origin of the universe, the beginnings and adaptive mechanisms of life on earth, evolution, and genetics.
>
> *Sequential Mathematics* includes the study of statistics and probability, graphing, elements of algebra, signed numbers, exponents, and the study of formulas.

The classes are team taught and experientially based. Students work in collaborative groups to explore themes based on the concept of *Beginnings*. They explore their beginnings as individuals, their beginnings as members of a group, their beginnings as researchers and workers. These topics are explored in all of their classes with the students usually being asked to demonstrate their understanding of the interconnectedness of the themes. An example should clarify this.

What Do the Students Study?

Students in *Beginnings* spend some time studying the ways that various groups of people explore the nature and beginnings of the universe. In the *Orientation to School and Society/Career Education* block, students may be reading the myths of the peoples of the world. Small groups of students will be studying different cultures, writing about and explaining these topics to their classmates. These myths may be read in English, in simplified English versions, or in native languages - but the reporting and writing are done in English, the *lingua franca* of these linguistically and academically heterogeneous classes. In the biology class, students explore the origins of the universe and of life from the scientific points of view. They examine the *heterotroph hypothesis*, read about Galileo, the *Big Bang Theory*, Darwin, and the like. They create timelines of the earth's different eras and

study genetics. In math class, they deal with signed numbers, concepts of infinity, exponential notation, and formulas relating distance and speed to objects in the universe. In any of the four classes, they may be writing imaginative, factual, and/or interpretive explanations of the beginnings of the universe, writing books, and making presentations based on the materials.

What Kind of Work Do Students Produce?

Students' own writing and explanations are a major learning and evaluative component in the *Beginnings* curriculum. All of the teachers have agreed to evaluate students, and have students evaluate each other, based on the intellectual and personal texts that they write throughout the semester they are in *Beginnings*. In the chapter on *The Present*, students will have a family tree, an extended discussion of the genetic makeup that has gone into selected aspects of their phenotypes, a discussion of the probabilities of their offspring having certain characteristics, an essay about their favorite relative, a timeline, and material of a more personal nature such as photographs and accounts of coming to America. As they work on these books, they develop a profound sense of pride in who they are and what they are doing. As they begin to compare and evaluate their work with that of their peers, they revise their work on their own. They develop ownership of their products. Writing becomes real in the best sense of the word.

Using a book as a medium of exploration and evaluation is also valuable for those students who have virtually no English when they begin the program. These students often start with pictures, words, and phrases, their prose developing more complexity as their ability to use the language increases. Similarly, students who are more fluent in English can demonstrate their ability using more sophisticated language. The books the students produce become the portfolio for the entire *Beginnings* curriculum.

What Benefits Accrue? What Problems?

What are some of the advantages in such a program for students of English as a second language? One benefit is the sense of closeness students develop with one another and with their teachers. Such a feeling usually promotes language development. Other benefits include increased comprehension of academic language and spurred academic vocabulary development. Concepts are developed in several subject areas simultaneously. A student who may be a little vague on *adaptation* when it is used in biology may begin to catch on when the same idea is used in the *Orientation to School and Society/Career Education* class. Ideas in one class become reinforcers for ideas in another class. Words connect. In such a program, writing also improves dramatically.

Beginnings has its difficulties. The instructors have to be in constant contact and discussion with one another. Lessons have to be planned in tandem; portfolios read, discussed, and evaluated. There is also the temptation to create unrealistic connections between ideas just to connect them to the course theme. These drawbacks, however, are minor compared with the interest and challenge that most of us involved in *Beginnings* experience.

Outline of Topics and Activities: Beginnings

OSS 1/PCD	*Biology*	*Mathematics*
• Interviewing • Reading Creation Myths Science Fiction • Writing Biographies & Autobiographies: Dedication Table of Contents Index Timelines Family Trees Memories Relatives Coming to the USA Interests/Skills Career Exploration Internship Selection Resume Future Possibilities • Library Visits Library Skills • Presenting • Portfolio Assessment	• Scientific Biographies • Beginning of the Universe • Beginnings of Life on Earth • Geological Timelines • Evolution and Adaptation • Genetics • Species Creation Project • Beginning of human life • Future of the Universe • Presenting • Portfolio Assessment	• Statistics & Probability • Exponential & Scientific Notation • Signed Numbers • Infinity • Algebra Basics Formulas Linear Graphs • Eulerian Graphing Digraphs Four color problem Weighting • Presenting • Portfolio Assessment

Activity Guide Outline

Your Partner's Beginnings

For this assignment, you will interview someone you do not know, to:
find out about that person's beginnings in his/her own country,
beginnings in this country,
and beginnings at The International High school.

You will also write an essay about that person and design a poster illustrating that person's beginnings.

Schedule of Activities:

Preparing the Interview
Brainstorm questions.
Ask questions.
Change roles.

Conducting the Interview
Complete the interviewing process.
Begin writing the composition about the person.

Writing the Draft
Put the first draft of the composition on the computer.

Providing Feedback
Read your partner's essay and correct any factual errors.
Exchange essays with another pair of students.
Complete a feedback sheet for those students.
Revise your essays.

Revising your Work
Continue revising essays; proofread them.
Continue working in the computer room.
Begin working on the poster of your partner's Beginnings.
Remember, you must have your partner's Beginnings in his/her native land, America, and The International High School

Making Oral Presentation
Introduce your partner, using the poster.
Present any other material the class requests.

Writing the Short Biography

In this activity you are going to write a short biography of your partner's beginnings in his/her native land, in America, and at The International High School.

Pick a partner in the class. The partner should be someone you do not know and someone who does not know your language.

Take a sheet of paper and divide it into three sections.
Label the three sections

Beginnings in Native Land	**Beginnings in America**	**Beginnings in The International High School**

Think of at least ten questions that would go into each category. Write the questions in the appropriate columns.

Share your best questions with the class when we have a class discussion of the questions.

Revise your questions if necessary and then ask your partner the questions.

Take notes.

Change roles with your partner.

First Draft of the Biography

Gather all the notes you took from your interview.

Write ten items that you want to include about your partner's beginnings in his/her native land.

Write ten items that you want to include about your partner's beginnings in America.

Write ten items that you want to include about your partner's beginnings at The International High School.

Write the first draft of your biography. Remember to divide it into three chapters.

Reading Your Partner's Writings

Reading for Meaning

One way to find out if your writing is clear to other people is to let someone else read what you have written. This is an interesting way to help someone else in the class and to learn something at the same time.

As you read your partner's work, answer the following questions on a clean sheet of paper. Keep this paper for the future since we will use it every time we examine one another's work.

What part of the writing do you like the best? Why?

What part did you find the most interesting? Why?

Are there any parts that were confusing? Where? Why were you confused?

Are there any parts that you think need to be changed? Which ones? Why?

Do you have any general suggestions that you want to make to the writer? Be specific.

Editing

Do all the sentences begin with a capital letter?

Do all the sentences end with a mark of punctuation that can end a sentence?

Are the verbs correct?

Are there any words that are spelled wrong? Which ones?

Optional

Do the subjects and verbs agree?

Are the articles correct?

Creating a Poster of Your Partner's Beginnings

While you are finishing the first draft of your partner's biography, you will also be working on a poster of your partner's beginnings.

Decide on the most important items about your partner's beginnings in his/her native land, the United States, and The International High School.

Take a piece of scrap paper and design your poster biography. It must include these items:

- your partner's name.
- your partner's country of origin.
- a sentence about your partner in his/her *native language* and in *English.*
- important information about your partner's beginnings in his/her country, the United States, and The International High School.

Make your poster interesting , colorful, imaginative, and uncluttered.

Transfer your practice poster onto the large poster paper.

Explain the poster to the class and display it in the room.

Reading and Evaluating the Biographies

You have been working on the *Beginnings* project for several weeks. Now it is time to share your completed work with other people in the class.

First, it gives all of us a chance to see how other people carried out their project.

Second, it gives us a chance to learn from the other members of the class.

Third, and perhaps *most important*, it gives us a chance to celebrate the accomplishments of one another.

How will we do this?

Listening to twenty-four presentations is boring - even for the best students - so we will do our first sharing in small groups of four students. Those four students will then select the one project that they want presented to the class.

Here are the steps:

Form a new group of four people to work with. These should be people you have not worked with on this project. This means you and three new people. The four people are:

Read the projects of the people in your group. As you read, look for what you think is good in the project and what you think needs to be improved.

Author's name:

Who was the book written about?

Write one interesting fact about the subject's *Beginnings*

- in his/her native land
- in America:
- at The International High School:

Write one question you would like to ask the subject.

Using the criteria discussed in class, evaluate the biography. Give the author both a grade and a short written comment explaining the grade.

Grade:

Comment:

What did you like most about the book?

What improvements do you think the author needs to make?

Once you have read everyone's project in your group, decide which project you would like the class to see.

We would like the class to see the project that_____ did.

We chose this project because:

The Tortoise and The Hare

Directions

Read the story.
Complete the exercise questions.

Once upon a time, the *hare* (looks like a rabbit) challenged the *tortoise* (looks like a big turtle) to a race. The hare was sure it would win because it was so fast. The tortoise didn't care either way, and accepted the challenge.

They both started at the starting line. There was a big crowd of animals around to watch. They laughed to each other. After all, everyone knew that the hare would win because it was faster than the tortoise. Both animals started off. The hare ran ahead, stopped for a drink at a stream, sat and rested, and teased the tortoise. The tortoise just put one foot ahead of the other and slowly walked down the path. The hare got bored and chased butterflies for a while. The tortoise put one foot ahead of the other and slowly walked down the path

The hare got to the finish line, but did not cross. After all, the race was all but over. So the hare curled up and took a nap because it was finished early and did not want to feel bored. And the tortoise put one foot ahead of the other and walked right by the hare and across the finish line. Later, on a television interview show, the interviewer (a bird) asked the tortoise, "How did you win the race?" The tortoise answered, "I put one foot in front of the other and kept walking. I knew if I took one step at a time, I would have a good result."

"But didn't you think the hare would win?"

"I didn't care. I cared about doing the race my way. I put one foot ahead of the other. If I won the race, that was good. If I came in second, that was good. I knew what I was doing every step of the way. . . and I did win."

Write the answers to these questions.

Who won the race?

Why was the tortoise able to win the race?

Why did the hare lose the race?

Think about this. The tortoise and the hare go to school. They go to math. Who do you think will be the better student? Why?

The teacher of the math class predicts that the tortoise will be the better math student. Why do you think she predicts this?

Do you agree with the teacher's prediction? Why or why not?

What kind of math student are you - a tortoise or a hare? Explain your answer.

Constructing a Family Tree

All living things have families: plants, animals, and humans. But humans keep records. A family tree records the relationships between you, your brothers and sisters, your parents, your relatives and your ancestors.

Put yourself in the middle of the paper. Pick any shape that you want. Just remember to keep the male shapes different from the female shapes. What shape did you pick to represent you?

What shape did you pick for the opposite sex?

Draw a straight line from yourself to your parents.

Add brothers and sisters next to you--if you have any.

Show your grandparents.

Show your aunts, uncles, and even cousins if you want to.

Show your great grandparents.

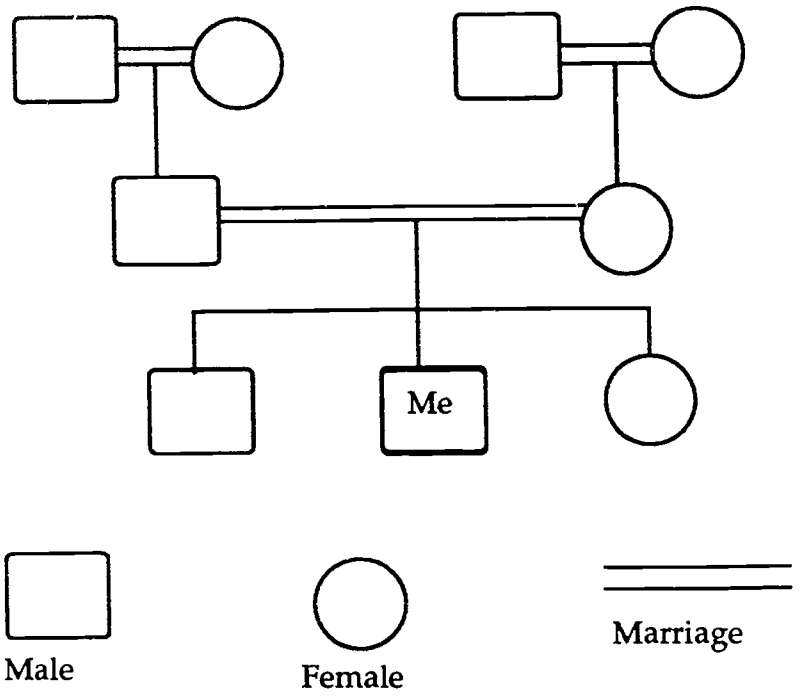
Show your great great grandparents if you can.

You can continue if you want to, but you do not have to do any more than these.

Make a *key* for your family tree. Show which symbols you used for male, female, and parents.

Add pictures of your family.

A sample family tree would look like this:



My Favorite Relative

A sample composition would look like this:

Of all the people in my family tree, I would say that my mother had the biggest influence on me. True, she sometimes hit me when I was a child-- and she even broke a board over my back once-- but she would have given her life for her children.

My mother only went to the fourth grade because she had to go to work to support her family. She always made sure that I had books, though, and she always read to me when I was a child. She wanted her children to get the chances she didn't have.

My mother-- whose maiden name was Josephine Tyburski, cried a lot as an adult. She never could keep her emotions inside her when something upset her. But she also

laughed a lot and she loved to dance the polka. On Sunday afternoons, she would put the radio on and dance the polka with her children.

My mother died four years ago. Her last years were special because she learned how to stand up to my father and to take the things that she needed herself. She died after having been hooked up to life support systems for a while. I like to think that she died with a smile across her face, knowing that she had taught her children how to take care of themselves, how to laugh, how to cry, and how to share. I don't believe in heaven, yet I do believe in memories that live with us. Josephine Tyburski DeFazio is with me in every classroom I'm in, every flower I smell, every dish of spaghetti or plate of guampki I eat.

Another Model

The most important person on my family tree is my daughter. This was a difficult choice for me, because I could easily have chosen my father or my present wife. I chose my daughter for a few reasons. She is the person whom I am able to love totally and without reservation. She also brings me the most joy. No matter how I am feeling, seeing her makes me feel good. I live to make her happy. Her happiness brings great joy to me. These are the reasons I chose my daughter, Sarah, as the most important person on my family tree.

Now, Write your composition.

Add the family tree and composition to your autobiography.

A Personal Timeline

Form groups of three or four.

Within your group, discuss the definition for *timeline.*

Write your definition of timeline.

Share your definitions and decide on the best one. One person from your group should write the definition on the board. As we read and discuss these, make any additions to your own.

Now that you have an idea of what a timeline is, it's time to make your own.

The first step is to think about the important events in your life and write them down on the chart. Use the model chart on the board as a guide. Begin to fill in the work chart. You also might want to add to this at home with the help of your parents. Another suggestion might be to look at an old photo album or a baby book to stimulate your memory.

Once you have the chart filled in, you are ready to begin making the actual timeline. You know that you have enough events on your chart when you are satisfied that the list tells about your life. Make sure that you have several events from the past, several from the present, and several from the future. Show it to a group member and ask for some feedback. A question you might ask them is, "Is there something that seems to be missing?"

Now look at some of the model timelines that other students have done and decide on how you want to make yours. Although we call it a timeline, it does not have to be in the form of a straight line. It doesn't even have to be in the form of a line. It could be shapes like squares, circles or triangles with the event written inside of the shape. It could be any design you create, as long as it shows important events in your life in *chronological* order. Remember, make it creative, colorful, neat, and uncluttered. Illustrate it. Do not use pen. Use colored pencils, and markers. You

can draw your own illustrations, use photos, cut pictures from a magazine or do all of the above.

Time Line Work Chart

Date	*Event*

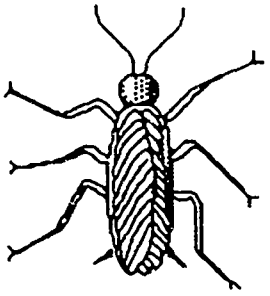
Illustrating Your Book

You are ready to illustrate your books. The reason we do this is to make the book more pleasing to the reader and give you a chance to use and develop some of your artistic skills and abilities.

There are many ways you can go about illustrating your books. You can draw appropriate pictures and illustrations and place them where they belong in the book. You can cut out pictures from magazines and paste them in the appropriate spots. You can use stick figures.

For ideas on how to illustrate your work, look at the work of other students. You may also ask other students to help with your illustrations.

Scale: Just how big did you say that cockroach was?



In the time of the dinosaur, cockroaches were about six feet (6') long. In inches, that's 12" x 6.0 = _____. Today, the average New York roach is about three - quarters of an inch (.75") long.

How many times larger was the ancient roach? How many times smaller is the present version?

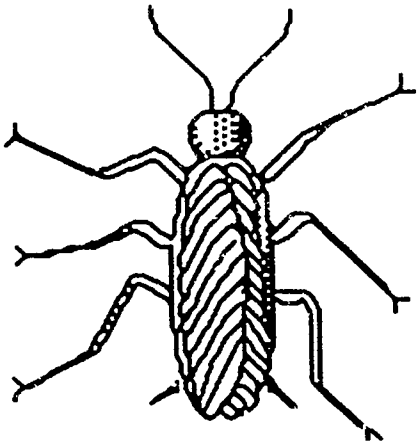
Why is each one suitable for its environment?

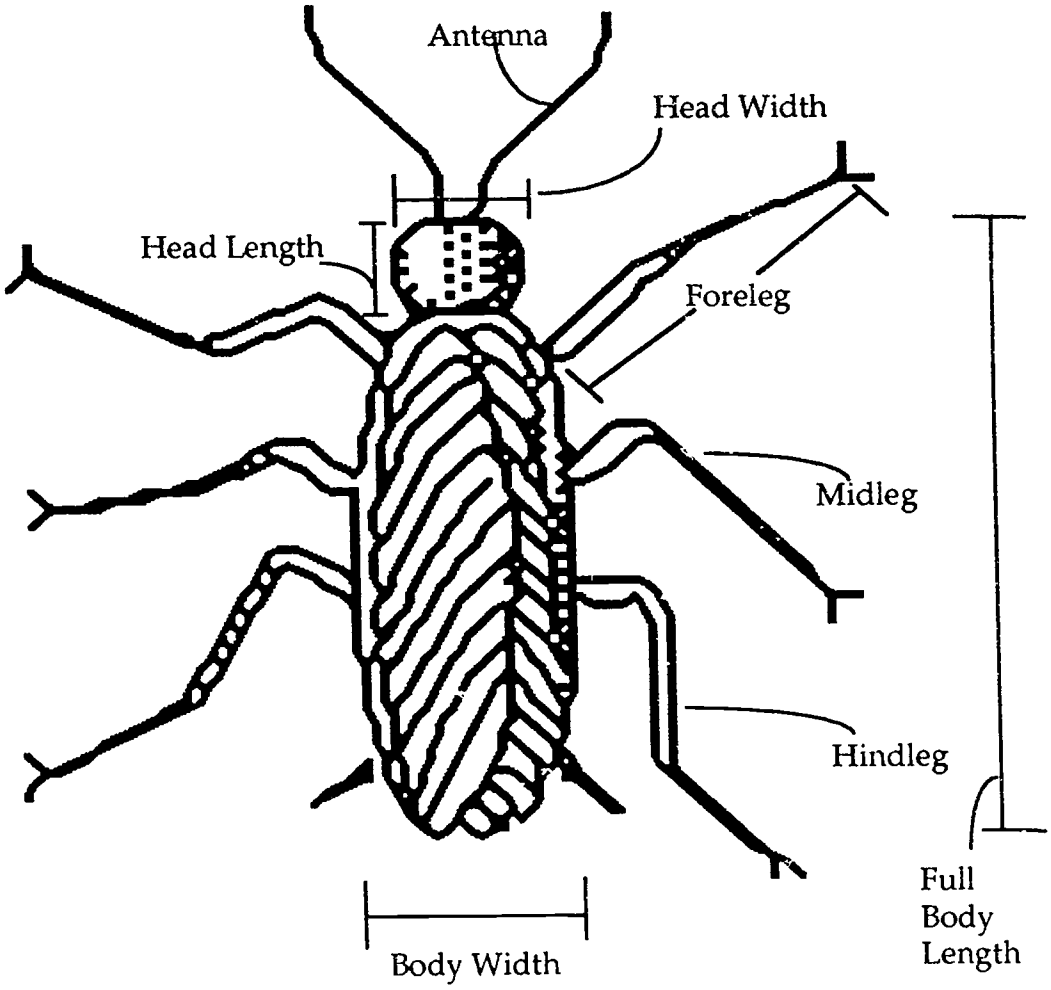
It's all a matter of *scale.* That's what this activity is about.

Study the cockroaches!

Cockroaches have a lot to teach humans. First, they don't really like humans. Cockroaches have been seen, in one study, washing themselves after coming into contact with humans. Second, they live almost anywhere they can find food - and that's almost anywhere. Third, they have survived on earth much longer than humans. Finally, scientists believe that in the event of a terrible world catastrophe, cockroaches will survive! (Such as the earth colliding with a meteor, a nuclear war, or we pollute ourselves out of existence.)

Look at the cockroach drawings on the following page. The drawings are different sizes. Develop a plan so that you can say, mathematically, how much bigger or smaller the roaches are compared to each other.




Antenna
Head Width
Head Length
Foreleg
Midleg
Hindleg
Body Width
Full
Body
Length

Our cockroach comparison plan

Ratio:

Complete the following chart by using the diagrams on the previous page.

Personal Roach Ratio Chart

Roach part (name)	Small roach part measure-ment S	Large roach measure-ment L	Ratio of small to large $\frac{S}{L}$	Decimal equi-valent	Ratio of large to small $\frac{L}{S}$	Decimal equi-valent
Full body length						
Body width						
Antenna length						
Head length						
Head width						
Foreleg length						
Midleg Length						
Hindleg length						
Antenna length + Full body length						

What do you notice about the column of decimal equivalents for the small/large ratios?

How do you explain this?

What do you notice about the column of decimal equivalents for the large/small ratios?

How do you explain this?

Math Theory: Pthe concept of ratio

Study the English explanations in the left column. Answer the questions in the left column. Translate everything into your language in the right column.

Ratios and decimal equivalents	**Translation**
Small over large ($\frac{S}{L}$) is a way to express a **ratio**. A **ratio** is a comparison of two numbers. The numbers represent two things. The two numbers or the two things must be of the same *class*. You can compare two arms, two legs, two cockroaches, two people, two cars, two measurements, etc. Then you can make a ratio. Mathematicians usually express ratio as a fraction. The numerator might be smaller than the denominator, i.e., ($\frac{S}{L}$) or it can be the reverse, ($\frac{S}{L}$). If you divide the numerator by the denominator, you get a decimal	

equivalent. A decimal equivalent has the same value as the fraction. A decimal equivalent is another way to express a fraction. If we actually wrote this decimal as a fraction, it would have a ten as its denominator. We use a decimal point instead.

1. Give a definition of *ratio*.

2. How do mathematicians usually express a ratio?

3. How can you find the decimal equivalent of a fraction

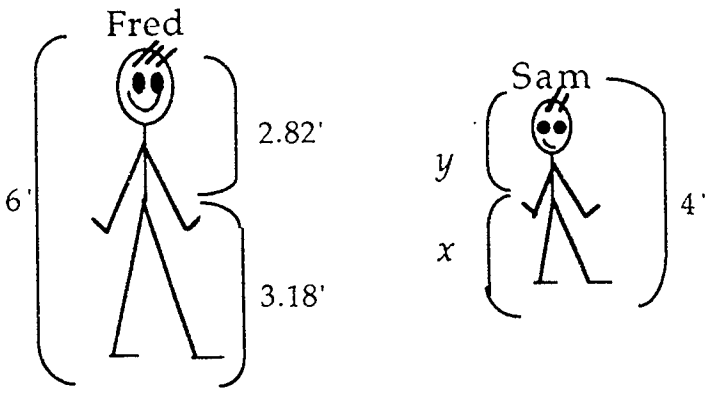
4. Can you have a decimal equivalent that is greater than .? Explain your answer.

Proportion: The equality of two ratios, or Mathematical predicting

You can use your understanding of ratio to predict numbers for other ratios. You can predict numbers for other ratios by using algebraic equations. This is a proportion.

Study the sample below..

Sample Problem



What do we know about Fred and Sam?

What is unknown?

Review the reading about ratio. What ratios can you find in the diagram? Give four ratios in numbers and in words.

Did you create some of these ratios?

$\frac{6}{4}$ $\frac{2.82}{y}$ $\frac{3.18}{x}$ or $\frac{4}{6}$ $\frac{y}{2.82}$ $\frac{x}{3.18}$.

Math Theory: doing proportions

The mathematics of proportion

$$\frac{a}{b} = \frac{c}{d}.$$

$$\frac{4}{6} = \frac{y}{2.82}.$$

The English description

General statement of proportion: The first ratio is equal to the second ratio. The symbols *a* and *b* have to be of the same classification (both legs, both arms, both chairs, etc.) The symbols *c* and *d* have to be of the same classification. (both legs, both arms, etc.)

4 is the measure of Sam's height. 6 is the measure of Fred's height. The ratio is height to height.

y is the measure of Fred's torso. 2.82 is the measure of Sam's torso. The ratio is torso to torso.

You read the **proportion** as *4 is to 6 as y is to 2.82.* (Height is to height as torso is to torso.)

$$\frac{4}{6} = \frac{y}{2.82}.$$

Show the math below.

The goal is isolate the variable. The variable is y. Explain below how you solved the ratio.

Find the value of x and explain your process.

Math:

Explanation:

How big were dinosaur roach parts?

Let's do proportion with our friends the cockroaches.

What do we know?

We know that the body length of prehistoric roaches was 6′.

We know that 6′ = _____″

We also know that 6′ = _____″ = 182.88 cm or 1.83 m

We know that the body length of our own friend the large roach is

_____inches, _____cm. _____m

Question/problem

How *wide* was the body of a prehistoric cockroach?

In the space below, set up the proportion equation using numbers for what you know and the variable x for what you do not know.

Solve the equation.

Check with your teacher. Then, complete the chart for the prehistoric roach.

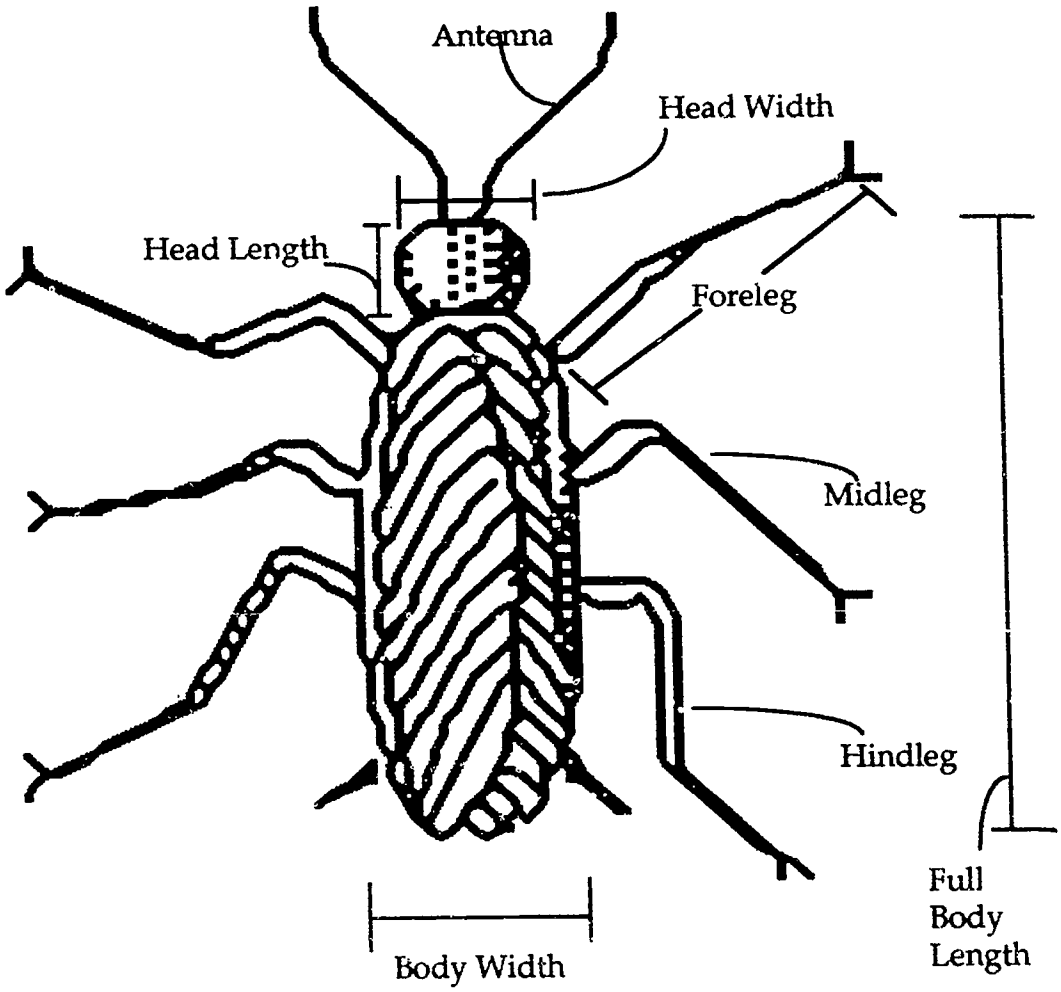
Predictive Roach Ratio Chart

Roach Part	Large Roach measure-ment (Unit of measure-ment?)	Proportion formula	Prehistoric Roach measure-ment (Unit of measure-ment)	$\frac{P}{L}$	Deci-mal equi-valent	$\frac{L}{P}$	Deci-mal equi-valent
Full body length							
Body width							
Antenna length							
Head length							
Head width							
Foreleg length							
Midleg length							
Hindleg length							
Antenna length + full body length							

Scale drawing our friend the prehistoric roach

Use the drawing of the roach below.

Label the parts with the correct size for the prehistoric roach.



Mastery questions

In your own words and with math examples, explain *ratio* and *proportion*.

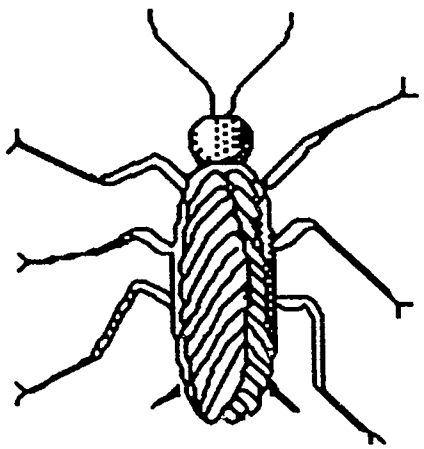
Describe three situations in real life in which a person might use the ratio and proportion knowledge. The person might be an average person, an engineer, a biologist, an artist, an architect, a carpenter, a military person, etc. You should write three paragraphs of 50 to 100 words each.

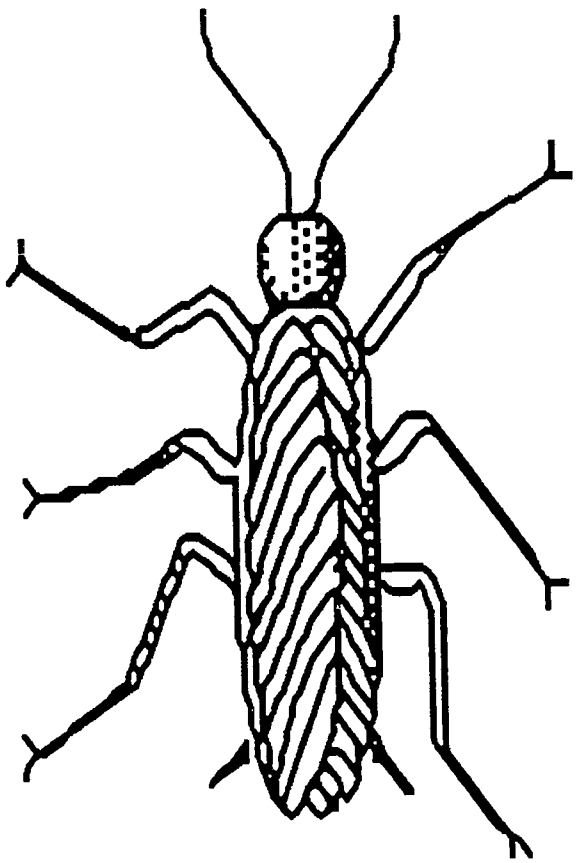
How could you find the ratio of the diameter of a circle to the circumference of a circle? Do it, and show your work.

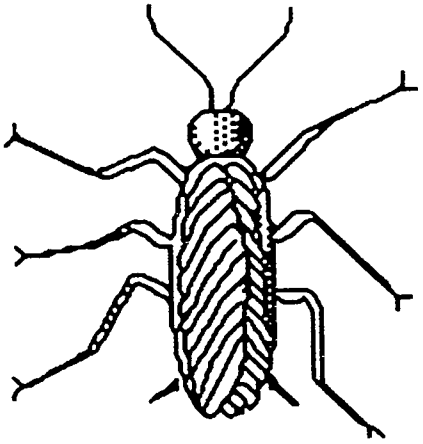
How large would a Combat roach trap have to be for a prehistoric roach?

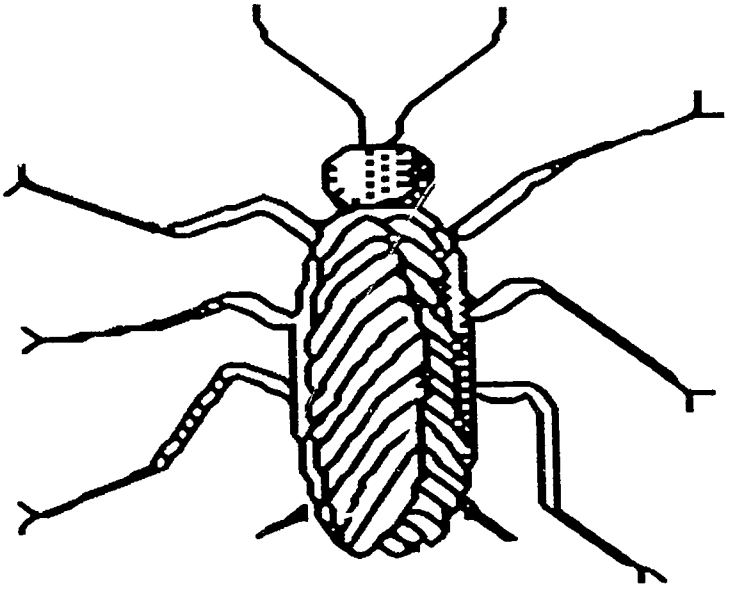
Optional Questions

For the following drawings, explain what is happening. Explain any patterns you find in the ratios:









The Beginnings Project

The Beginnings project ties together the learnings from all components of the program. Students move from an exploration of themselves, an exploration of the world of work, to an exploration of the universe.-.both real and imagined. They finish the cycle by working on skills related to finding information - indexing, making a table of contents, creating a glossary - and end with a critique of their own work and that of their peers.

Chapter l: In the Beginning

In this chapter, students learn how to conduct interviews. They interview a classmate and write a biography based on that interview. They also conduct an imaginary interview with a scientist. Afterwards, students begin a study of the creation of the universe using materials drawn from world myth and from scientific literature.

Chapter 2: What Used to Be

In this chapter, students begin their autobiographies. They research their past to discover information about themselves, their families, and their native countries. They research the history of life on earth and the nature of adaptation and evolution. They use timelines to help them place all this material in perspective.

Chapter 3: What Is

In this chapter, students explore what they are like now. They examine their interests, their skills, and their career goals. They use the knowledge they derive from their study of genetics and psychology to help them understand how they got this way. They learn how to select information to write a resume and choose their first internship.

Chapter 4: What Will Be

In this chapter, students imagine what their lives will be like in the future. They discuss their career aspirations and begin to research what they need to do to reach these goals. They practice job interviewing skills. They use their knowledge of genetics and adaptive mechanisms to create their own species of animals.

Chapter 5: Where to Find It

In this chapter, students learn how to create an index and a table of contents. They publish their autobiographies and make presentations to their classmates. They develop a glossary of the scientific vocabulary they have been learning all semester. Finally, they help develop evaluation criteria for use in examining their own work and that of their fellow students.

The Personal and Career Development Program

Program Design

The Personal and Career Development program at The International High School, a three-year sequence and graduation requirement for all students, is an experiential program which provides students with the opportunity to explore their career interests while applying and extending their developing linguistic, socio-cultural, and cognitive skills in meaningful settings. It differs from a vocational training program in that it is meant to broaden the students' views of themselves in society, and to make them aware of the variety of options available to them, rather than to prepare them for specific trades or careers. It was designed to fulfill these three educational principles from the school's *Mission Statement and Philosophy:*

> Language skills are most effectively learned in context and embedded in a content area.
>
> The carefully planned use of multiple learning contexts in addition to the classroom (e.g., learning centers, career internship sites, field trips), facilitates language acquisition and content area mastery.
>
> Career education is a significant motivational factor for adolescent learners.

The program consists of three courses, each followed by an off-site field experience, or *internship*. During each 12-week internship cycle, students spend 14 hours per week over a four day period at their internships, returning to school each day for a half day of course work. On the fifth day they attend internship seminar, conducted by their teacher/supervisor.

All entering students take *Personal and Career Development 1* during their first year at The International High School. The theme of this course, based in psychology, is *Myself.* Students examine their feelings, their motivations, and their interests. They apply what they have learned about themselves to the process of selecting their first internships. *Personal and Career Development 2* examines the topic of *Humans in Groups,* providing the opportunity to look at family and societal structures in the different cultures represented in the school. The second internship occurs in the winter of the second year. The third course, taken in the spring of the second year, is *Decision Making,* followed by the third and final internship in the fall of the third year. The last course in the program, *Research,* is taught by teachers in the Integrated Learning Center at the beginning of the fourth year. In this course, students develop and refine their research skills, while surveying career possibilities and college opportunities, and completing their college applications.

Program Experience

The growth, both personal and academic, experienced by the students at The International High School does not stem from any one program, one experience, or one way of doing things. It is a comprehensive program in which all members of the community regularly reinforce each other's efforts. This can occur because the staff has the opportunity to experiment in a supportive environment free from competition and punitive consequences. Issues of turf, which are found in traditional schools, do not exist here. All staff teach. All staff do guidance. Teachers are not possessive of individual students; rather they consult with each other as to how to provide consistent support for the efforts of individuals. The career education program is successful not only because it is well-conceived, but because the entire staff supports it by providing meaningful experiences for the students, by locating new sites, by helping students to identify their interests and talents, by relating course work in all subject areas to careers and the world of work.

Students do not automatically perceive the career education program as valuable. Initially, many are resistant to confronting the personal issues raised in *Personal and Career Development 1*, and uncomfortable exposing personal information to the teacher or the class. The efforts of the *Personal and Career Development 1* teachers are reinforced by the personal approach of the entire school community. Personal issues are similarly examined in Integrated Learning Center courses dealing with orientation and immigration issues, in literature courses, in global studies, in human development, in leadership group, in group dynamics, and in biology. Students are regularly asked to relate their learnings to their own experiences.

Some students are reluctant to embark on their first internships. Some do not perceive a relationship between internship and their (traditional) concept of school. Their expectation of school is teacher domination, involving listening, copying, reading, memorizing, and taking tests. Others experience serious anxiety over the prospect of losing the support system they have grown so comfortable with at school. They are afraid to go out on their own, and to be separated from the school. They are afraid of being in a totally English speaking environment of a different culture from their own. They are afraid of using the telephone, not only in the context of their jobs, but even to call their supervisors to report that they will be absent or late. And they are not certain that they will be able to deliver what is expected of them.

Many students return to school after their first day on internship requesting a change. The reasons they give range from boredom to weather. Students are encouraged to give themselves and the situation a chance. They are guided by their internship teachers to articulate their problems clearly. When the student has a negative perception of the internship situation, the teacher will work with him or her in role playing, in preparation for negotiating the situation with the site supervisor. The teacher will then follow up by making a site visit and consulting directly with the supervisor. If the situation proves to be unreasonable, a change will be made. The most important part of this process is for students to learn how to negotiate with their

superiors and coworkers rather than turn their backs on problems and difficult situations.

Students have begun to take advantage of the internship program rather than using it merely to fulfill requirements. Several students have chosen to have internship experiences above and beyond the required three part-time placements. In 1990, we established a relationship with the Executive Internship program at City-as-School, which places students on full-time internships with more sophisticated responsibilities than the ordinary half-day internship. Initially, two students participated in the program. By the fall of 1992, the group had expanded to 22 students, several of whom extended their stay past the normal 12-week cycle.

The benefits of this program are overwhelming, developmentally, academically, and vocationally. Students report increased maturity, self-esteem, and English language ability. They conduct themselves with greater self-assurance and independence. These qualities clearly translate into greater academic and vocational success. Many students have been hired by their internship supervisors for summer jobs and for part-time jobs during the school year. Teachers of those in college courses report that International High School students participate and interact more comfortably in their classes than the college students. Students are beginning to make long-range plans in selecting their courses, in consideration of college and career goals. They are learning to make informed decisions based on their experiences and reflections rather than taking the easy way out or choosing to do what their friends are doing. One student who was allowed to take the same internship twice said, "It helped me more than if I would have taken another internship because in this internship I didn't have to start from the bottom to prove my efficiency; they already knew it." In other words, he was using the opportunity to build on his already developed skills and reputation. Students are using the career exploration aspect of the program to rule out fields they thought they wanted to pursue, and to identify how they would like to spend their time. As one student who initially wanted to be a pilot wrote,

> *I have a clearer idea of the kind of work I would like to do. I would like to do active and human type of work because I would like to help people and I don't want to do the same type of work every day.*

It has taken a full seven years of experience to develop the career education program into a comprehensive one that provides continuity and follows the growth of the students from start to finish. Future efforts should be concentrated on how to further integrate the career education program across the curriculum and draw increasing support for its goals from the other content areas.

Internship Album Instructions

In order to receive credit for your internship, we are asking you to complete the project required of all internship students. The details are explained in the following pages.

- This is a major project, and the final product should be between twenty and thirty pages.
- Do not wait until the end to do the project. You will not be able to complete it.
- Read all of the instructions and write down any questions you have. You should do this the first week of your internship. Ask questions at your internship seminar.
- Make a calendar of when you will complete each part of the project.
- Do chapter one immediately.

When you finish this project, you will have a document that you will be very proud of. Enjoy!

Internship Project Overview

Components of the Album

Cover: title and illustration
Statement of Purpose
Table of Contents
Business Card
Dedication
Chapters 1-4

Chapter One - Beginnings

Goals: What I want to achieve and learn
Why I Chose This Internship
The Interview
The First Day: My fears, how I felt

Chapter Two - My Internship

My Organization or Business: Purpose of the company, the various departments
My Internship Site: Description, maps, pictures, surrounding neighborhood
My Supervisor and Coworkers
A Typical Day at My Internship
Duties and Responsibilities
My Work Attitudes
My Best Day at My Internship
Vocabulary I Have Been Learning
Skills I Have Been Learning and Improving
What I Still Want to Learn
What I Have Been Learning About Myself
What I Have Been Learning About the World of Work
Interview With My Supervisor and Coworker

Chapter Three - Preparing to Live and Work in the 21st Century

My Fantasy of Living and Working in the 21st Century
A Description of My Career
The Qualifications and Preparation for My Career
The Job Outlook for My Career in the 21st Century

Chapter Four - Final Thoughts

Comparison of My Internships
Letter of Advice
Thank You Letter

Introduction

Cover

Make a title for your album that includes the name of your internship site.

Add an illustration, which can be a drawing, picture, or photograph that reflects your internship site.

Include your name.

Statement of Purpose

Think about what you can learn by creating and working on your album. Think about how other people can benefit from reading your album.

Write a page explaining why you are making this album.

Table of Contents

This tells the reader the names of the chapters and headings, and the page(s) they are on. The Table of Contents should be written after you have completed the album.

Example:

Business Card

Create your own business card.

A business card introduces you to another person. It contains the following information:

- your name
- the business or organization that you work for
- the title of your position
- the company's address and telephone number
- a logo (a picture or design) that represents the company.

Dedication

You may dedicate your album to any person you wish.
Explain why you have dedicated your album to this particular person.

Chapter Two - My Internship

1. My Organization or Business

Include the following information:

The name of the organization or business

The internship site address

The purpose of the company.

List all the various departments (accounting, computers, records, emergency room, audio-visual).

What department do you work in? What does your department do? How many people work in it?

2. My Internship Site

Draw a picture or take a photo of the building in which you work.

Describe the size and the style of the building.

Take some time to walk around your internship neighborhood.

Describe the neighborhood.
Draw a picture or take photographs of the neighborhood.
Is it residential? (Do people live around there?)
Is it commercial? (Are there many stores and/or businesses?)
Is it industrial? (Are there factories)?
What kinds of buildings surround your site?

What is interesting about your site and the neighborhood where you work?

What does your office or workplace look like?
Is it clean, modern, nicely designed?
Is it a pleasant place to work?
Draw a map or take photographs.
Where do the workers go during their free time? Is there a lounge or cafeteria?
Does your employer provide you with free lunch?

3. My Supervisor and Coworkers

Tell about their job titles and responsibilities.

Describe their personalities.

4. A Typical Day at My Internship

Write a description of an average day at work.
Tell how you get to your internship and how long it takes you. What do you do?
Who do you see?
Who do you work with?
What do you do when you take a break?

5. Duties and Responsibilities

List everything you do or have ever done on your internship.
Be specific. You should list at least fifteen to twenty duties and responsibilities.

How do you contribute to the work your department does?

6. My Work Attitudes

Describe your work attitudes.
Do you show enthusiasm?
Do you take initiative?
Do you accept criticism well?
Do you have good attendance?
Are you punctual?
Are you pleasant?

7. My Best Day at My Internship

Describe a special day at work.
Why was it so special?
What happened?
How did you feel?
With whom did you share this experience?
What was their reaction?

8. Vocabulary I Have Been Learning

Make a list of the vocabulary you learn on your internship.

You see and hear hundreds of new words and expressions on your internship. In order to learn the most that you can, you need to be an active learner. Take some time on your internship and notice anything that you don't know the name of. Ask people the names of these new things and have them spell them for you. Keep a list. When you hear a new word, write it down, even if you spell it wrong. Then ask someone at work to help you spell it correctly and explain what it means. Add it to your list.

9. Skills I Have Been Learning and Improving

Write a list of every skill you have acquired and/or improved upon since you began your internship.

Put a star next to the skills you have mastered (learned to do very well).

10. What I Still Want to Learn

Describe one or two new and *realistic* tasks or information you would like to learn.

Look around you. Notice what the other workers are doing that you haven't learned. Ask your supervisor or a coworker to help you learn new tasks and information. They will appreciate your initiative.

11. What I Have Been Learning about Myself

How has the internship affected your personality?

Do you feel more or less confident than you did before you went on internship?
Do you feel more mature?
Do you have more self esteem?

How has the internship affected your career plans?

Do you like the kind of work you are doing on internship?
Did you think you would before you started?
Have you changed your mind about your future career? Explain.

Do you have a clearer idea of what kind of work you enjoy and don't enjoy (detailed work, active work, various work)? Explain.

Have you seen a career while you were on internship that would interest you?

12. What I Have Been Learning About the World of Work

How is work different from school? Explain.
In what ways do you behave differently at work from the way you behave at school?

Do all the people at your internship site like everything about their job?
How can you tell?
Do workers do some work they don't enjoy? Why?

Do you think people are relaxed or stressed where you work? Is that because of their personalities or the nature of their work?

13. Interview With My Supervisor and Coworker

Make an appointment with your supervisor and coworker.

Make a list of questions you want to ask.

Examples of interview questions by topic:

Career Development

When you were a child, what did you want to be when you grew up?

Why did you choose your career?

Did your family support you in your choice of career?

Was it hard for you when you started your career?

Is your career what you thought it would be?

If you could start over, would you choose this career again? What were the goals that you wanted to reach when you chose your career?

How long have you been working in your job?

What other jobs have you had?

Did you ever change your career? If so, why?

What job would you like to be doing in five years? In ten years?

Education

How much education do you have?

If you went to college, what did you study? Is your career related to your major course of study?

What college and/or university degrees do you need for this career?

Did you need additional training after college?

Do you need to pass a licensing exam for this career?

What school subjects do you need to be good in to become a _____?

Job Satisfaction

How do you feel about your job?

How do you feel about your coworkers?

What do you like most about your job?

What do you like the least about your job?

Does your job interfere with your personal life?

Did you ever feel like quitting your job? What did you do about it?

Do you always feel like coming to work every day?

What do you do when you get bored by your work?

Did you ever feel like you chose the wrong career? If so, what did you do or do you plan to do about it?

What kind of person would be happy with this type of career?

Salary and Benefits

What is the starting salary for a person in this career?

What is the range of salaries for a person in this career?

What kinds of benefits do you get in this career?

Health insurance	Vacation
Medical	Tuition
Training	Maternity leave
Pension	Stock options
Savings plans	

Can a person live comfortably on the kind of salary you get paid for your career?

Future Employment Outlook

What are the chances for someone to get a job in your field immediately after college?

How competitive is your field?

Is there room for advancement and promotion?

How do changes in the economy affect job security in your profession?

Would you recommend this job to a young person today?

Do you enjoy what you are doing?

Do you have plans to change to a related career or to a completely different career?

What education and/or training did you have in order to qualify for this career?

What education and/or training will you need for a promotion or to change to a different career?

Write all the answers during the interview. In addition, it would be helpful to use a tape recorder. But you must ask permission of the person you interview *before* you tape it.

Write the information you have received in paragraph form.

Sample of part of an interview report

My Interview With Dr. Izzy Sikh

I interviewed Dr. Izzy Sikh. He works as a pediatrician in Lenox Hill Hospital. He has been working as a doctor for fifteen years and likes it very much. He especially likes working with children because he is happy when he helps sick children feel better. The only thing that makes him unhappy about his work is when a child is seriously ill or hurt and he can't help him.

Dr. Sikh became a doctor because it was always a dream of his. He said that he had to study very hard for very many hours in college and in medical school for about ten years. He says all his hard work was worth it, because his job offers him both a good deal of satisfaction and a good deal of money.

Criteria for Program Adoption

- Potential impact on the education of limited English proficient students
- Voluntary participation on the parts of all staff members involved
- Multicultural sensitivity and an openness to new ways of functioning
- Willingness on the parts of content teachers to assume responsibility for language development within the context of their content instruction
- Provision for ongoing staff development, with participation by all program participants
- Willingness to take responsibility for their own staff development activities, including planning, implementing, directing, and participating in the sessions
- Freedom to develop curriculum based on the needs of the students in the program
- Readiness by the staff to experiment and to experience that which they expect their students to experience
- Development of student-centered, and project-driven instruction, emphasizing student activity in the classroom rather than teacher lecture
- Agreement to provide the Project personnel with required evaluation data

List of Publications

- *The International Approach*
  Volume I
  Volume II

  The International Approach describes selected courses taught at The International High School and provides sample activities.

- *Beyond High School Graduation Requirements*

  Beyond High School Graduation Requirements explores what is important for students to learn.

- *Personnel Procedures*

  Personnel Procedures explains how the staff at The International High School selects, supports, and evaluates one another.

- *The Motion Program*

  The Motion Program: A Videotape (12 Minutes) tracks students through a day in The Motion Program.

  The Motion Program: Curriculum includes all of the activity guides and supporting materials for The Motion Program.

  Visibility/Invisibility: Curriculum includes all of the activity guides and supporting materials for the second course in The Motion Program.

- *Insights*

  Insights is a collection of reflections by staff members on their experiences at The International High School.

- *Beginnings: Videotape*

  Beginnings: Videotape tracks students through a typical day and highlights the major features of Project PROPEL.

Project PROPEL
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