

1989

**Progress Report  
Spencer Foundation  
Year 3**

**Creating New Forms of Educational Activity:  
A Strategy for Re-mediating the Context of Education**

Report prepared by  
Michael Cole and Ageliki Nicolopoulou  
with the assistance of Megi Asano, Paul Hartwell,  
Mikala Limbrecht, Carol Speaker, and Lora Taub.

The authors would like to thank the following individuals and institutions that have contributed to this activity: first, Lisa Scaltrito and Anthony Scott who played the essential role of site coordinators and the children who participated in the program; in addition, Peggy Bengel, Valerie Crawford, Karen Fiegenger, Lisa Kemp, Michael Stewart, Scott Woodbridge; UCSD and the various community institutions that also played an essential role as described in this report.

## Table of Contents

1. Introduction .....	1
1.1. The Past-briefly .....	1
2. Year 3: An account of our activities .....	2
2.1. The operation of the main sites .....	2
2.2. Growth of the main sites .....	2
2.2.1. UCSD .....	2
2.2.2. The Boys and Girls Club site .....	3
2.2.3. The Library site .....	5
2.3. Community outreach .....	6
2.4. Additional activities in and around the Fifth .....	7
2.4.1. Systematization of the Fifth Dimension structure .....	7
2.4.2. Documentation of the activities .....	8
2.4.3. Attempts for institutional and community consolidation .....	9
3. A glimpse into the Fifth Dimension .....	11
3.1. Quality of educational interaction: A preliminary analysis of King's Quest III .....	11
3.2. Telecommunications Activities .....	13
3.2.1. Far Away .....	13
3.2.2. Intra-site Communication .....	18
3.2.3. When Intra and Inter Collide .....	19
3.3. A Wizard's view of its tasks .....	20
3.4. Parental conceptions of the Fifth Dimension .....	26
4. Uptake and Generalization of the System .....	33
4.1. Uptake in the Community .....	33
4.2. Uptake by the University .....	34
5. Year Four .....	36
5.1 Tracking the Flow .....	36
5.2. Analysis and write-up .....	36
Appendix 1: The Fifth Dimension and its play-world .....	
Appendix 2: Velham's abduction of the Fifth Dimension: a mixed marriage of goals .....	
Appendix 3: The Fifth Dimension Forum .....	



## 1. Introduction

This summer we have reached a crucial point in our research on the creation of after-school educational activity systems. Up until this point, we have relied on resources external to our activity system for its basic operation and growth. Starting in July of this year, the remaining staff of the project began to devote their time almost entirely to data analysis and documentation of the continued development of the system.

### 1.1. The Past-briefly

Our major goal has been to create a community-based system of afterschool educational activities capitalizing on existing institutional structures. Major sub-goals of our research efforts have included: (1) testing the efficacy of activity-based approaches to learning and development as a source of guidelines for organizing powerful learning environments; (2) the use of computer-based games and educational software in combination with the presence of undergraduate helper/guides to promote computer literacy and pro-social behaviors; and (3) the use of computer networks as a strategic medium for sustaining interaction between the University and the Community.

Year 1 was devoted to introducing various community organizations to the potential project.

During Year 2 we initiated the system in 3 communities: two of which showed great promise of growth, but one of which proved unsuccessful in the long run. The successful systems, in the Solana Beach Boys' and Girls' Club and the Library, attracted funds to purchase computers and software as well as a modem, and were able to accommodate the activity in a way that also fit their goals. At the same time, the University (UCSD) put classes involving work in the community sites in its curriculum; developed special curriculum materials to assist computer novices and computer phobics (which many students attracted to such classes are); and permitted use of its Unix system for a bulletin board--created by students in the class--to be used by the community children that participated at the afterschool programs.

During Year 3, which will be the focus of this report, we continued pursuing the multiple goals of this project. On a general level, we sought to regularize and extend the work of the previous year, while also making preparations to relinquish responsibility for supervision of the afterschool programs to the participating community institutions. Intensive effort was placed into documenting the activities at each of the sites, including some videotaping in addition to the extensive taking of field notes. The children's bulletin board was improved, and distribution materials were written up. Lastly, the spread of similar afterschool programs were attempted in various settings, with some proving more successful than others.

## 2. Year 3: An account of our activities

### 2.1. The operation of the main sites

This was the second year that the main sites, Boys' and Girls' club and the Library, housed successfully our after-school educational activities, otherwise known as the Fifth Dimension. Since our activities run with the help of UCSD undergraduates--who are in training while at the same time providing their services to the community--the period that the programs are in operation is connected to the university's academic schedule. This year the sites were open for a period of three academic quarters, each of which extends for 10 weeks. Of these 10 weeks, the first two were devoted to intensive training of the students before they work with the children; and thus the sites were fully operating 8 weeks per quarter: fall, winter, and spring. Both sites were open four days a week; and each site was closely supervised and coordinated by a member from our research staff who was at their designated site each day that the program was in operation. The rest of us went to site intermittently and each carried the burden of other activities connected with the greater scope of the project.

In the following section, we will focus first on the growth of the three main sites: UCSD, Boys' and Girls' Club, and the Library. Through the combined efforts of community members and eager students taking the class, three more sites sprouted that attempted in one way or another to copy the main sites and introduce some version of the Fifth Dimension program. An account of these new sites will be taken up next.

### 2.2. Growth of the main sites

#### 2.2.1. UCSD

This year again the university offered the class connected to the sites every quarter: fall, winter, and spring. The class grew in popularity and we had to turn many students away. During the fall and winter quarters we had a total of 35 and 34 students respectively, but during the spring quarter the demand was so high that we felt compelled to accept 40 students. Every quarter about 2/3 of the students were involved in some capacity with the main sites: either working directly with the children at site, or working indirectly by answering the mail to the Wizard that the children wrote, or carrying out some special project related to those sites.

In both sites, the greater influx of students during the spring quarter provided a greater number of them who were working directly with the children, reaching the limits of the capacity for both sites. The Boys' and Girls' Club, a slightly larger site than the Library, had between 5 to 6 undergraduates per day working directly at site with the children during the fall and winter quarters, and 8 undergraduates per day during the spring quarter. The Library site had between 4 to 5 undergraduates per day during the fall and winter quarters, and 6 per day during the spring quarter. It should be noted that these numbers do not include the coordinator who was at site every day, the professor who visited both sites very regularly and even worked with the children, and the occasional

regular visitors each quarter. Given the type of high quality program that we are trying to implement, the numbers during the spring quarter seem to have reached the absolute capacity of our current system, and retrospectively in the case of the Library site exceeded it.

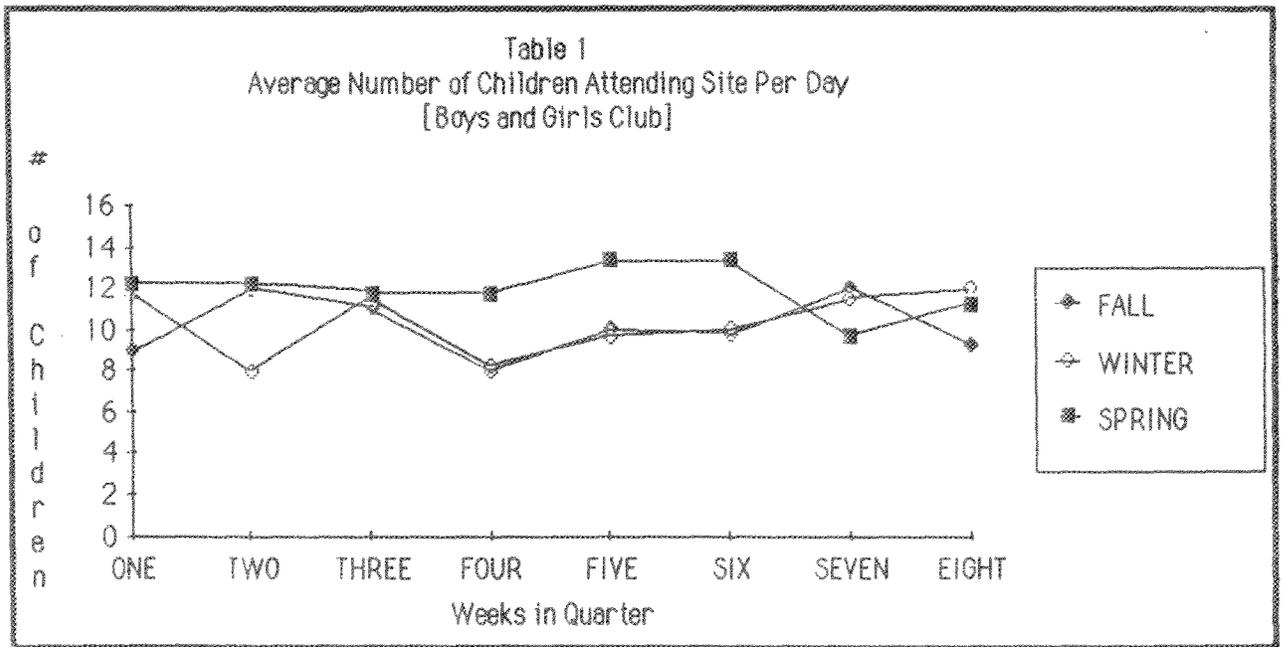
### **2.2.2. The Boys and Girls Club site**

The Boys' and Girls' Club program has been housed in a rather spacious room that the club has conceded to our activities. Members of the club generously donate their old, and sometimes even new, computer equipment that in conjunction with those that the university has offered there is more equipment around than we can or even like to use.

The club mainly serves working parents, ones who in this community vary from the occasional affluent to the economically depressed, and accepts children from 6 years to early teens. It is located geographically (and strategically) between an elementary and an junior high school, both being just next door to it. After school, the children walk by themselves to the club and stay there until their parents come to pick them up after work.

The club offers a number of activities for the children to do, like athletic games, shop activities, cooking lessons, and so on. It exhibits, however, a rather relaxed and slightly lackadaisical type of organization where children can choose any activity they like to do, stay at it as long as they please, and then walk in to another one. Often, they just sit around or play with their friends at the pool tables, or at the socker tables, or even at some arcade game; other times, they run back and forth with their friends following the leader of the group and share the secrets that children of these ages have. In short, the after-school is easy going, often boisterous and noisy, with a lot more boys running around and having fun than girls. The girls seem to be of a more restricted age range than the boys and given the atmosphere they appear as boisterous as the boys. In periods between quarters, when we only had the Boys' and Girls' Club program in operation for a couple of times, the Library parents who drive their children to site stood with them either outside the club or just outside the door to the Fifth Dimension's room and clearly they did not want to let their children alone in this boisterous atmosphere until someone from the Library project staff would arrive. Similarly, a child from the Library, who while waiting for her mother to pick her up took out a book and was reading, was in sharp contrast from the screaming and running children around her. Interestingly, when the 5thD is in operation, it stands in contrast to the raucous and noisy environment around it. Although the teams get excited with their games and are often playful, the 5thD seems to be a more quiet and structured place than the rest of the club.

Given the abundance of children around site and many children's familiarity with the 5thD, a good number of them attended the program from the very first week that the site was in operation this year (see Table 1). Curiously, the average number of children per day each week and the pattern of site attendance was very similar during the fall and winter quarters, but the average number of children per day increased slightly during the spring quarter. This increase was probably due to the higher recruiting effort that went on during the spring quarter. Because there was a larger number of undergraduates at site, a fear among them was that they would remain idle watching another team play rather than work with a couple of children themselves, an activity far more rewarding in



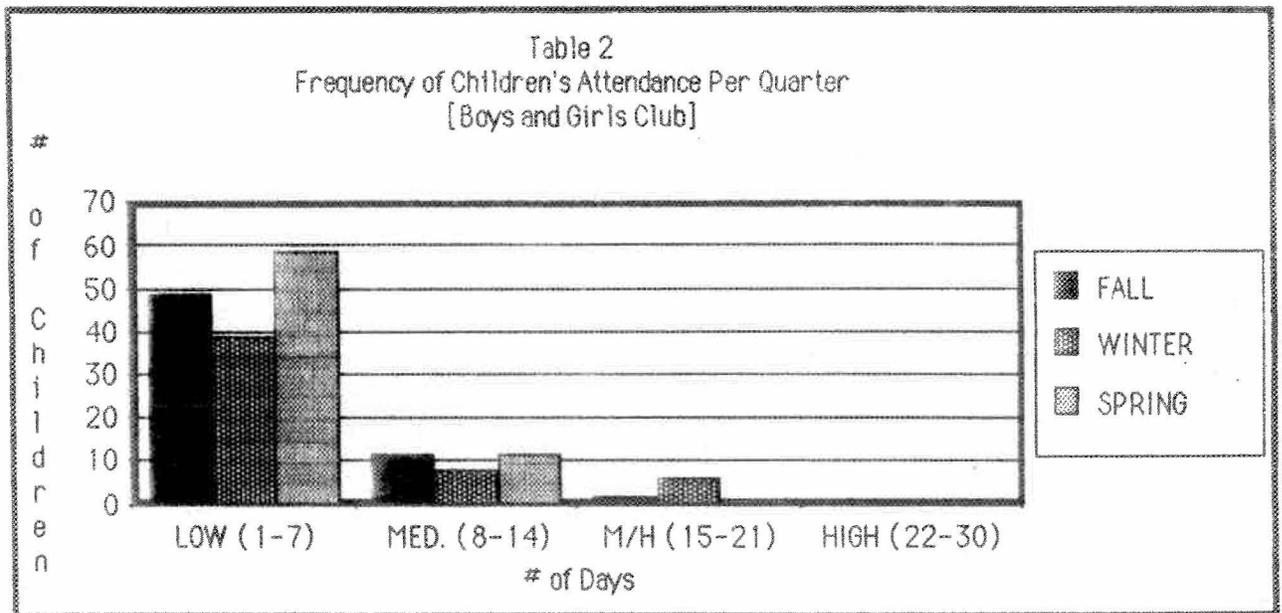
the eyes of the students than merely watching another team. For this reason, when there were not many children for everyone to go around, the undergraduates went out into the rest of the club and recruited children who were standing idle. One result of this effort is that several students who spoke Spanish--some of them being hispanic themselves--brought into the Fifth a number of hispanic children, a group that has resisted several of our previous efforts to introduce them to the 5thD program.

During the first two quarters, the range of the number of children who participated at site per day varied from 6 to 17 in the fall and 7 to 15 in the winter; when estimating the average number of children per day each week they varied from 8 to 12 for both quarters. During the spring quarter, the range of the number of children at site varied from 8 to 17, or in estimating the average number of children per days of each week from 10 to 14.

Given the large number of children at site per day, more often than not the undergraduates worked on an activity together with a couple, and sometimes even, three children. We discouraged undergraduates from working with a single child because a large component of the program is based on teaching children to work collaboratively with other children and learning to help and respect each other. In particular, we have observed that children at the Boys' and Girls' Club show a greater tendency to shut themselves off and work alone when in front of a computer. We have tried to counteract this tendency and we were successful at least in having groups of children work together; whether a collaborative spirit also prevailed awaits further analysis.

The picture of children's attendance of the Boys and Girls program needs to be qualified by two factors. First, not all of the children who came to site remained during the entire session, which lasts for an hour and a half. The Fifth Dimension is also influenced by the organization of the club where children come and go as they please. In our effort to conform with the ethos of the institution, we have accepted so far the rules of the institution for the operation of their other programs. And second, although a large number of children came to the 5thD each quarter, the greatest number of them attended the program at a low attendance rate (somewhere between 1 and 7 days out of the possible 30 days per quarter) (see Table 2). Specifically, 78%, 74%, and 82% of the children who participated at the program per quarter were of low attendance, while only 19%, 15%, and 17% showed medium attendance (i.e., between 8 to 14 days) for fall, winter, and spring, respectively.

Our preliminary analyses show that the fact that a larger number of children came to site infrequently compounded with the fact that they often did not stay the entire period has affected the quality of interactions achieved by the group of children working together. It has also affected the possibility of bonding that can be achieved between the undergraduates and the children, an emotional state that enters into whether children would freely allow the undergraduates to influence and guide them through the games. These observations are based only on some preliminary analyses and we expect to pursue these question in further detail this coming year.



### 2.2.3. The Library site

The Library's Fifth Dimension took place in the same large room as the rest of the library. This is a medium-size library located on the first floor of a shopping mall and occupies a single rectangular area located with its longer side sideways. The 5D program took place at the furthest right-hand side of the library on a large table next to the furthest stacks. This table could hold, with difficulty, up to 5 computers when the 5thD maze occupied one side of the table, and 6 computers when the maze was balanced on a chair. Near this table was a small cabinet that contained an IBM-compatible computer with a modem that was hooked up for telecommunications. When this computer was not being used for telecommunication, it was used to play games, despite the fact that the monitor had no sound. In a section of the library which was located at a diagonal from the 5thD there was a Texas Instrument computer that was also used by the 5thD program. When the children chose to play a non-computer game, like Battleship or Master mind, they had to hunt for a place to sit. They often sat on the floor at the other side of the library next to the encyclopaedias. As the children were playing, it was often necessary to remind them that they were inside a library where other people were studying and they shouldn't get too excited about their game. In addition, the 5thD would end a few minutes before the closing of the library to put all the equipment away in a storage area.

Thus, the immediate impression that would strike any visitor to this 5thD program was its smallness and the restricted physical conditions that it had at its disposal as opposed to the Boys' and Girls' 5thD. Ironically, it is in this small place that some of the best interactions were achieved and some of our richest data were gathered, in addition to the feeling of togetherness that flowered more easily in the Library's 5thD program than the Boys' and Girls's program, both between undergraduates and children and even among the undergraduates.

Why did this happen? Before we can attempt an explanation, we need to consider in some detail both the type of children who came to the Library's 5thD and also look at the growth of the site for this year.

From interviewing the parents at the end of the year, we were informed that the majority of them learned about the 5thD by coming in the library and that they either saw the program in operation or saw the advertisements around (see section on "Parent's Conceptions of the Fifth Dimension" for a more complete account). Thus, the majority of the parents were patrons of the library and often came there with their children.

The library is located in a rather inaccessible place for children. It is far enough from any of the near-by schools and a child must be driven there. In fact, the majority of the children were driven to the 5thD, and a number of them came in car pools; few of the older ones rode their bicycles here and there. The parents then had to make special trips or special arrangements for their child to attend the Fifth, which attests to the fact that they liked the program and were eager for their children to participate in it. In fact, these parents were concerned with their children's education. They generally asked a lot of questions about the program and when interviewed --although a bit vague about the esoteric aspects of the program--they had thought a lot about its pros and cons.

During the fall quarter, despite the fact that we had contacted the children who had attended the 5thD last year and those whose names were on the waiting list, the number

of children who came to site was rather low. The range of number of children per day varied from 2 to 9, and the average number of children per day each week varied from 3 to 7 children (see Table 3). Throughout the fall quarter and, in particular, during the Christmas break, we made efforts to advertise our program. We got an advertisement leaflet approved by the Solana Beach School District and talked to two near-by school principals about the program. We also talked to some teachers in bilingual classrooms because we were most eager to have some hispanic children of the community participate in our program.

During the winter and spring quarters, children's attendance increased steadily. During the winter quarter, the range of number of children per day varied for 4 to 12, with an average range of children per day each week varying between 5 to 8; during the spring quarter, the range of number of children per day varied from 6 to 12, with an average range varying from 8 to 10 children.

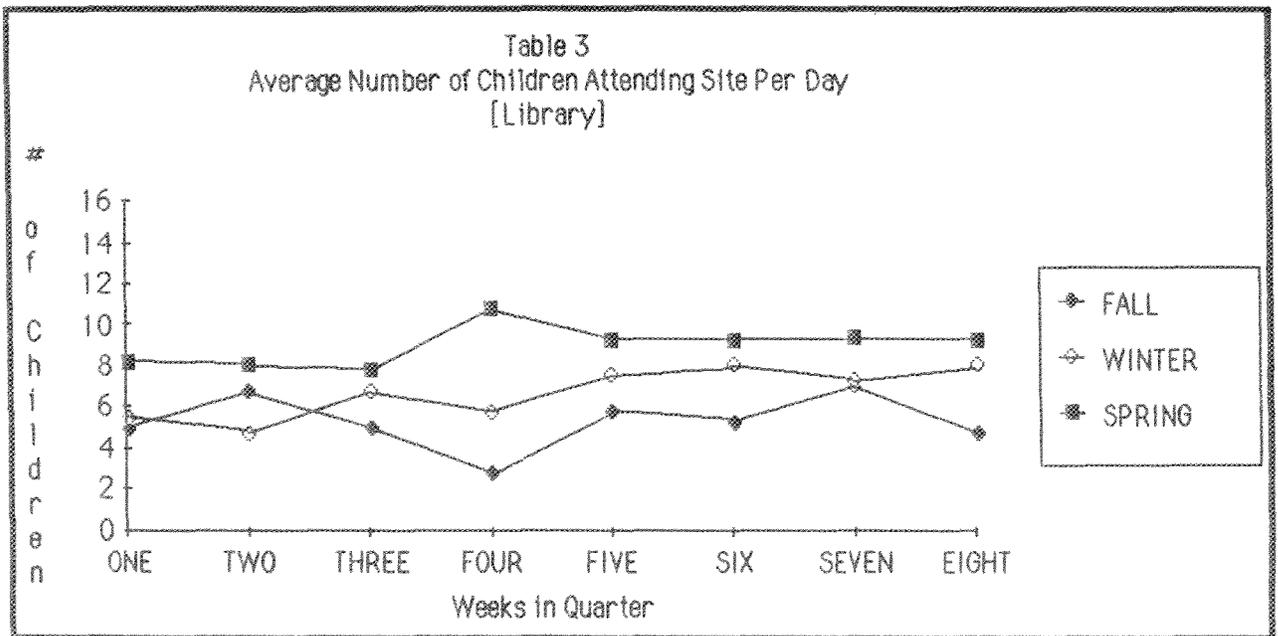
As the parents of the children informed us, the fact that the 5thD was in operation in the library every afternoon attracted the attention of both parents and children, who were using the facilities of the library. In addition, a few of the undergraduates brought in some children they knew; and several of the children brought in their friends to join the 5thD. Thus, by the spring, the library was full of eager children who came rushing in from school to participate in the program.

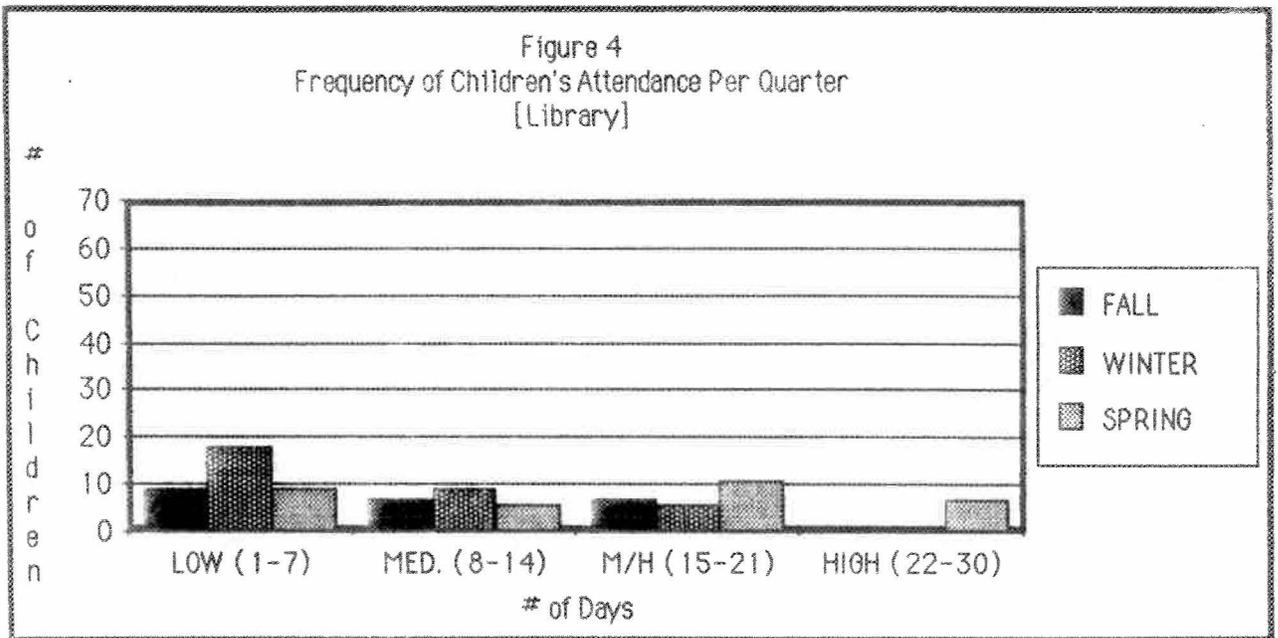
Even during the fall quarter when the site had fewer number of children ( $N=23$ ), one third of them (30%) attended the program with a medium/high frequency, which in the case of this site translates somewhere between 9 to 12 days out of the possible 16 days per quarter (see Table 4). Our aim was to serve as many children as possible through this site; and because its capacity was small, we restricted the number of days that the children could come to site. They could come either Mondays and Wednesdays or Tuesdays and Thursdays, which coincided with the two days that the undergraduates came to site. This way the same undergraduates and the same children would be at site the same days, which contributed in creating a friendly, familiar, and involved environment. Often an undergraduate worked with the same group of children for a day and even for several days. Although at first the formation of the groups was casual, it soon became set so that any rearrangements were discussed between the coordinator and the undergraduates after site. Because the children were driven to site, it also resulted in the fact that they would participate the entire session. They came to the library to participate in the program, and that is exactly what they did. When they didn't like the program, for one reason or another, they stopped coming.

It is these factors explained above then that seem to have contributed to the high quality of interactions and collaboration that was achieved at this site. In turn, this contributed further to the greater frequency with which the children attended the program; although in the winter quarter only 3% of the children attended the site with a high frequency (13-16 days), 21% did so during the spring quarter.

### 2.3. Community outreach

In addition to the two sites which were the focus of our efforts, we attempted to include additional institutions with instructively mixed success.





Immediately adjacent to the Solana Beach Boys' and Girls' Club is the community's junior high school. Owing to the interest of a UCSD colleague, Jerry Balzano, in developing educational activities with computers, we attempted to initiate an after-school activity there. This effort was of special interest because we have found the elementary schools too nervous about outsiders using their equipment after school to permit them to participate.

After two quarters we gave up this effort. There were many sources of difficulty. Although there were plenty of computers, very few students displayed an interest in the program. In part this disinterest can be attributed to the attractive alternatives that teenagers have for after-school activities, in part to the fact that the activities were overly "schoolish" consisting of learning to program in Logo and on a MacIntosh. Telecommunications contacts were sporadic and unsatisfying. So, despite support from the principal and the school's computer teacher, the program failed to attract kids.

Two other efforts were rousing successes, and will figure in our description of uptake of the program in a later section. First, owing to the combined efforts of enthusiastic undergraduates and an activities director at a nearby Boys' and Girls' Club, the 5thDimension was gradually introduced into a second club site and drew more children than it could accommodate. Second, again through the "seedwork" of undergraduates, a local private Deweyesque elementary school enthusiastically adopted the 5thDimension and even added an important innovation (which we had attempted unsuccessfully) involving elderly people as mentors using the telecommunications system while they remained at home physically.

#### **2.4. Additional activities in and around the Fifth**

Besides the actual operation of the main sites there were a number of other activities to which we devoted our efforts.

##### **2.4.1. Systematization of the Fifth Dimension structure**

Throughout the academic year we engaged in further systematization of the activities of the Fifth Dimension: games, task cards, children's activities, and telecommunications. Our aim was to improve the Fifth Dimension structure and keep tailoring it to each of the sites so that by the end of the year we would have a well-working structure to leave to each of the institutions.

We re-worked the distribution and arrangement of games to accord with the principles outlined in the attached "Designing a Fifth Dimension." We introduced several new games and wrote task cards for them, while we also tried to improve the task cards of several of the old games to accord with the principles outlined in the attached "General guidelines for task cards." (For both materials see the attached "The Fifth Dimension and its play-world.")

A great deal of effort was also devoted to systematize and formulate further the activities for these children who comprise the second generation at the Fifth: those who

had completed their first level of participation as citizens in the Fifth and were now young Wizard's Assistants. (See section 1 "Overview of the Fifth Dimension program" in "the Fifth Dimension and its play-world" for further explanations.)

The activities for this group of children had not been well defined so far and each quarter we refined and expanded their activities taking into consideration what we have learned the previous quarter. (The final formulation of their activities can be found in the previously mentioned materials.) We also attempted to improve the electronic bulletin board system that the children use for telecommunications. The efforts in that domain are described in the section on telecommunications.

#### 2.4.2. Documentation of the activities

One of our highest priorities for the year was to obtain rich data about the level and quality of interactions that occur in each of our after-school programs. Our basic documentation has been in the form of field notes that are written by all participating UCSD students, site coordinators, and any additional research staff who might be at site, including occasional visitors. The strength of the documentation technique we have chosen lies in that it provides us with the point of view of the *acting* participant and not just that of the passive participant. This has the additional advantage that, besides capturing the cognitive and social aspects of the interaction, the acting participant often comments with authority about the emotional state of the participants as well as the emotional overtones during the interaction, a component that has proven elusive to capture even with videotaping. However, an obviously subjective component penetrates the field notes and thus any analysis based on them requires sifting through the text very carefully using methods developed by textual analysis.

Given the significance of the task, a great deal of emphasis was placed in training the students to write good field notes. Besides providing students with a guide of what aspects were important in their recounting of the events (see section 3 of "The Fifth Dimension and its play-world") and lecturing to them in class about it, a great deal of class discussion was devoted in helping to perfect this practice. Good and bad examples of field notes were read and discussed with the students, in addition to a discussion of the practical and theoretical questions that would be answered through these field notes. Furthermore, the professor together with the site coordinators and another research staff each read at least a subset of the field notes, so that all were read by two people. This practice ensured that we would capture any obvious factual mistakes. But most importantly we engaged in public (electronic mail) dialogue with the students giving them comments about the content of their field notes and occasionally probing further on the recounted incidents, thus filling in occasional gaps. The discourse was conducted in a public arena because the aim was not only to obtain more complete information about an incident, but also to sensitize the rest of the students to the issues and nuances of behavior that they need to include in their field notes.

Thus, each quarter we had several students who managed to perfect the technique of writing field notes; and their number increased steadily throughout the year because we also had several students, who tended to be our best ones, who attended the class all three quarters.

In addition, during the spring quarter, a student videotaped once a week for a period of 15 minutes different segments of each after-school program, which produced an hour and a half tape. Given the restricted time range of the videotaping, these tapes will not be used for analyses but as documenting instances of the quality and range of interactions.

### **2.4.3. Attempts for institutional and community consolidation**

Throughout the year we also pursued the goal of trying to coordinate with the staff at the Boys' and Girls' Club and the Library to guide and help them in finding ways to successfully bring about the next phase of the project: to transfer the primary responsibility about the operation and maintenance of the after-school program from the research/university team to the community institutions, while delimiting the university's responsibility in training the students and providing the sites with the personnel to work with the children.

Two main possible avenues for future organization emerged with time and discussion: (a) to obtain adult community volunteers to act as site coordinators; and (b) for the community institution to create a new position among its staff members that would fulfill the role of site coordinator.

The Library staff favored the solution of obtaining adult volunteers and as far as they were willing to discuss this is the only solution they considered. We should mention, however, that early on during the year it became clear that the Library staff did not want to talk to us directly about the program. They preferred to channel communication through the Friends of the Library, a grass-roots local organization. The reason given to us for this strategy was that the library was always very busy to meet us, and that meeting at some other time would be outside their work load. Thus, we attended often the monthly evening meetings of the Friends of the Library, which were also attended by the head librarian.

The library advertised in several local avenues for volunteers: in the general library pamphlet sent to their patrons; in local newspapers; and in a pamphlet about the Fifth Dimension located at the front desk. Over the period of two years, half a dozen people expressed an interest; of those about half came to site once and no one came a second time. We talked to all of them over the phone and explained our program, and to the ones who came to site we tried to familiarize them slowly with the various aspects of the Fifth Dimension. Maybe, despite our efforts, the program overwhelmed them; or maybe they were overwhelmed by the fact that they were the only volunteers.

As early as last summer we have been discussing the possibility of the Boys' and Girls' Club hiring someone who had attended the UCSD class to be the coordinator. As we continued discussing, it became clear that getting institutional approval of the position would take a while because they had to submit a proposal to their general board, which made such financial decisions once a year. For this reason, we discussed with them the possibility of helping them write a grant to apply to some local community organization for support, until the position could be approved internally. Although they were eager to write a grant, it soon became clear-- more to them than to us--that asking the local supervisor of the Solana Beach Club to write a grant, even with our generous

help, was much more than such employees of the club were trained or payed to do. Furthermore, this person might not have been the right one to take on this responsibility, perhaps because of where he is in the hierarchy.

Later on, a student from the class, Mikala Limbrecht, who was very heavily involved in helping the near-by Encinitas Boys' and Girls' Club start its own Fifth Dimension, became familiar with the internal hierarchy of the club and started pursuing this alternative vigorously. After a series of meetings with the directors of both clubs, Solana Beach and Encinitas, as well as the supervisor of all the local Boys' and Girls' clubs (which includes that of Del Mar), it was decided that the club should apply to some community organization for the support of the coordinator's position. The club has now hired someone who would raise money for them by writing grants, but the grant pertaining to our after-school activity is currently written by the above mentioned student because this employee is unfamiliar with the structure and rationale of the program. Besides helping to edit this grant, we have also provided the club with an extensive list of local organizations to apply for funding, a list that was compiled by several of our staff when we started to pursue these ideas with both institutions.

The final result of these efforts are taken up in the latter section that addresses the community uptake.

To expand further on our rapport with the community and the institutions, we seized every opportunity given to us to either present or talk about our program. For instance, we gave demonstrations about the program to the entire staff of both the Library and the Boys' and Girls' Club. We were interviewed by a local paper, the San Diego Sun, and we attended several meeting of the Boys' and Girls' board, at one of which they gave us an award for the program.

To help further in the consolidation and success of the program we have been in the process of writing several documents that would serve to be distributed both to the students who take the class and to the coordinator of the sites. These materials give an overview of the various aspects of the Fifth Dimension program, they attempt to explain the principles of how to design such a program, how to write good task cards, and even how to write good field notes. All these materials have been included in the Appendix.

### 3. A glimpse into the Fifth Dimension

#### 3.1. Quality of educational interaction: A preliminary analysis of King's Quest III

##### Introduction

King's Quest III, a commercial adventure game and part of the sequence King's Quest, is one of the games that we have singled out for a detailed analysis for several reasons.

First, this game was very popular among the children. During the spring quarter, when this particular version was introduced at the Solana Beach sites, it was played 16 times at the BG club and 21 times at the Library out of a possible 29 times for each site. This resulted in a large number of children attempting to master the game and we obtained a rich body of data about children's progress on: 27 one-page field notes for the BG club and 21 several-page field notes for the Library.

Second, this game was also popular among the UCSD students participating at the sites. Several of them found the game interesting and challenging so that they made sure that they played the game either before or during site. As one of them wrote, "I had played King's Quest I during my one visit to the Library last quarter, and found it to be the most interesting computer game I had ever played" (field notes; CS, 4-12-89). The undergraduates' interest in the game stems from the fact that it is a challenging and complex adventure. As CS continues, "I had also found it to be very complex and involved, so I was glad to have someone with me to try to figure it out [MC, another UCSD student]--I was even happier when Matt [a 11-year-old boy and a Young Wizard's Assistant] sauntered over to offer his expertise to the situation [make sense of the game and attempt to write a task card]."

The student's comment brings forward the third and most important reason for choosing this game for analysis. Because it is a difficult game both to master and to solve, it provides a unique opportunity not only for collaborations among the children but also for the active involvement of the UCSD students. Thus, besides studying the conditions that foster and sustain collaborations, it provides a unique opportunity to study the way knowledge is created and shared among the participants of the small Fifth Dimension groups that work together on a game. Unlike other games, the undergraduates know as little as the young children in this game; and aside from their more advanced critical problem-solving skills, they are no better off than the children. In fact, they probably have much less expertise in playing such games, as CS's relief, when a child comes to play with them attests. For this reason, the introduction of this game at the sites provides a rare occasion to study the creation of knowledge among participants who possess diverse skills and levels of expertise. This occasion will test whether our theoretical intuitions about the make-up of the student-child groups can be sustained. Furthermore, because this game is difficult, it provides further opportunities for knowledge transmission among the new participants that come to master the game, whether the old player is still there or has moved on to a new game. Whether children take up these opportunities would attest to the collaborative spirit that our Fifth Dimensions as a whole has been able to achieve.

Fourth, since this game was introduced at the same time at both Solana Beach sites, it provides a good opportunity to compare the quality of interaction that is achieved both within the smaller units of interaction and also the larger 5thD group. A comparison between sites is important because they differ mainly by factors that reflect the organization and qualities imposed by the larger institution where each Fifth resides. Such a comparison might be able to provide an outline along which each Fifth might be further organized in order to overcome some potential problems.

And finally, since intercommunication about this game was flowing from another far away site (USSR), the analysis of this game provides yet another opportunity to test another aspect of the cultural theory that has been incorporated in our after school activities; that is, inter-site communication.

### **Some general observations**

We are still in the midst of coding and analyzing this game so we cannot present a complete discussion of the results. But our preliminary analysis yields the following general observations.

The children at the two sites did not advance equally in this game. Six children at the Library learned well the first and second phase of the game, as opposed to one child at the Boys' and Girls' Club who learned well only the first phase. In the Library, a team of children even completed the third phase of the game, while at the Boys' and Girls' Club the child who learned the first phase soon lost interest.

Equally diverse performances were observed among the UCSD students at the two sites. Four adults at the Library learned the first phase of the game well, and two of them even progressed to the third phase. In contrast, two adults learned well only the first phase of the game at the Boys' and Girls' Club.

Looking at the progress of the children in the game in the context of the social interaction with the undergraduates, it emerges that especially during the first phase of the game, the children need a knowledgeable adult around them. The adult doesn't have to be extremely knowledgeable, but at least a step ahead of the child so that it can give a future, purpose, and direction to the pieces of information that the child has gathered. Because these type of adults were lacking at the Boys' and Girls' Club, a good deal of children's interest withered on the way, including the most capable of the children at site.

The adults at the Library, however, learned the game together with the children using the resources available to them to make sense of the game and thus structure and guide the children's behavior. After they were able to consolidate the knowledge about the first phase of the game, which simultaneously consolidates the main goal, the children could take off on their own. In fact, the team of the two children who got the furthest in the Library had no adult directing them; the undergraduates, nominally working with them, knew much less than the children. The one who helped them the most and occasionally rekindled their enthusiasm was the coordinator who would drop by here and there to see what they were doing, and supported them when they were doing well, or gave them a hint or two of how to proceed.

In conclusion, when a child has been able to build a good foundation on an activity, he or she can continue for longer periods on her own. Only then s/he can explore and profit from such explorations. The role that adults play is differential depending on

which part of the task the children are: at the beginning they need much more support than further on.

### 3.2. Telecommunications Activities

There have been three basic rationales for the considerable effort that we have put into making telecommunications via computers a basic element in our after-school educational activity systems:

1. Telecommunications are a fundamental element of computer literacy broadly conceived.

2. The goal of coordinating with other people who can be reached only through telecommunications provides a motive for writing, which in turn provides a natural environment for children to be self-analytical and to practice writing skills (e.g. basic literacy).

3. The existence of the telecommunications systems we have set up creates principally new interconnections between the institutional setting of the university and that of the surrounding community, maintaining interaction at crucial junctures for continued growth of activity.

The basic facility used directly by the children was a user-friendly bulletin board/electronic mail system created by our project for use inside a single account on the UCSD Unix system that is the basic medium for telecommunications used by faculty and students. During the year we modified the system to make it easier to "gateway" between the self-enclosed system and regular electronic mail or the satellite-based system we use for communications with countries that do not have access to Bitnet.

The children engaged in four basic kinds of communication using this system. First, some liked to send mail to other children attending the same center but at different times. This use was especially popular among pre-teens, but evoked suspicion among adults because its content was sometimes not considered socially acceptable. Second, children sent information about useful strategies for dealing with the various computer games/tasks to the bulletin board, and referred to these "hint files" when they had difficulty with a game. Third, children wrote and received mail from the Electronic Wizard as a routine part of their problem solving activities on the computer. Fourth, children wrote and received mail from children in far off locations about the contents of the computer-based problems, trading hints and opinions. Because they were the most frequent uses, we will briefly describe the nature of the correspondence between the children and the wizard, and between the children and far off sites.

#### 3.2.1. Far Away

The local children interacted with children in four other locations: a day-care center in Chicago, a community center in New York (East Harlem), and two sites in Moscow, one at a children's center, the other in an after-school club located in a public school. As an example of the volume of mail traffic, we have so far sampled mail activity from March through June of 1989. Keeping in mind the fact that kids were on vacation around

Easter and that there is a hiatus in our activities at the beginning of UCSD quarters while undergraduates are trained up, approximately 12 weeks of activity occurred during this period. During that time, children in the different locations exchanged about 230 messages. For example, 76 were sent from the Solana Beach sites, 81 from the two Soviet sites. Virtually all of the children had the experience of sending and receiving mail about an activity of interest to them at least once, and some of them participated in such exchanges several times. Some idea of kind of exchanges that take place are illustrated in the sequence of messages which follow.

Several kinds of messages are contained in this small sample. The first set is between children who have been seeking to solve a problem in combinatorial analysis that makes various visual patterns, which they then evaluate and compare. Note that a "Real Wizard" enters the exchange after several turns to pose questions and highlight various facets of the task that might spark further analysis and exchange among the children. A slightly different function of the Wizard is illustrated a few notes later when a child does not get feedback from other children on a request for help (it is vacation time for many of the children, but not those in day care) and the Wizard steps in to fill the time/ communication gap.

We are currently actively engaged in the analysis of this corpus of correspondence, and activity that will take up the better part of the coming year. Our analysis includes not only the content and sequential organization of the messages themselves, but dense descriptions of the contexts of those messages in the form of field notes.

From Solana Beach to Moscow. October 31, 1988

Dear Soviet Friends,

Valerie and myself (Ben LaBreche) are writing you from the Solana Beach Library. Factory is a cool game, and very challenging when you are playing the hardest level.

Our tip that we have for you is, remember to rotate the right number of degrees. For example, in our last game, we had a lot of trouble because we could not get the edges correctly positioned. You have got to understand your angles to play this game well. 45 degrees and 135 degrees are easy to mix up because they both make the same shape. A diamond, unless you start with a diamond. Then, you get a square.

Your Californian Friend,

Ben L.

-----  
From Moscow Nov. 4, 1988

Hallo Vahid!

We've received your letters. We played Factory on the highest level. But we didn't have much trouble with angles. By the way we don't think, our designs were much like cats [As Vahid had suggested]. We worked on new designs and our plan was to make designs much like cats. You may try them on your computer. Here it is: 2 square punches, medium stripe, rotate 45, 1 circle punch, rotate 45, medium stripe, 2 square punches, rotate 45. Can you make up some designs look like some animals or like this? (It is not a question only

for Vahid, but for Ben and everyone , who receives  
this letter. And you may try our designs on your computers.)  
Sasha, Eugeny (Today his behavior was wonderful),  
Michael (We'd better shorten his name, because he  
had not good behavior today), Pavlik, Paul.

-----  
Hallo Ben!

We'd like to ask you a question. You told us , that you  
love debishell, but we don't know what it is. Can you explain  
us this thing? And you can read about our playing Factory in  
Vahid's letter and you can send us some designs.

Sasha, Eugeny, Michael, Pavlik and Paul.

-----  
From Solana Beach to Moscow Nov 7, 1988  
Dear paul, dan and michael,

We tried all of your products. We liked Dan's the best.  
Here are some of our products:  
rotate, 45, punch, square, 3, punch, circle, 3, stripe, medium,  
rotate, 90, stripe, thin, punch, square, 2, stripe, thin.  
This is Lisa Fernandez's product.

stripe, thick, punch, circle, one, rotate, 180, punch,  
square, two, stripe, medium, rotate, 45, stripe, thin,  
rotate, 45. This is Crystal Lincoln's product.

punch, circle, 1, rotate, 45, stripe, thin, rotate, 90,  
punch, square, 2, punch, circle, 3, rotate, 135, punch,  
circle, 1 This is Andy Hart's product.

Please try out our products and tell us which one's you like  
best. Sorry we got to you so late. We are really looking  
forward to receiving your next letter.

Your friends from the Fifth  
Dimension,  
in Solana Beach,  
Lisa F, Crystal, and Andy

-----  
From the REAL WIZARD Nov. 8, 1988

Dear young people creatures in the USSR and the USA.,

Lisa, Andy and Crystal have exchanged directions for  
products with Paul, Dan and Michael. I have two sorts of  
questions. First, suppose we wanted to make some ornaments  
with different designs on different sides; which ones of  
these would look good together? Second, it seems to me,  
my young friends, that there is some wasting of machines  
here; why are there holes punched on top of holes, does it  
add to the design? Is there another way to make these  
products that don't use so many machines?

Vahid seems to have tried to send an answer to the note

from children in the USSR. BUT, something odd must have happened, it didn't seem to be complete. Maybe it will get straightened out by later this week.

Eugene and Ryan, could you please do me a favor? Could you find a lovely but difficult design and send me a good description of it so I can try reproducing it? I would like a border for the plain wall in my computer room; I would like it to be admired by people creatures but I am not sure I understand their, oops, your taste enough to pick out a good design from their, oops, your point of view. Could you two be in charge of finding one that people agree is very good and then let me know about it?

I hope you're enjoying November.

Sincerely,  
The Wizard

-----  
From Chicago Mar. 13, 1989

DEAR NEW YORK,  
FROM MARCH 1, 1989. WE ARE PLAYING SUPER FACTORY, BUT WE NEED INSTRUCTIONS FOR IT BECAUSE WE NEED HELP. ITS 25 DEGREES OUTSIDE AND 105 IN THE SCHOOL. HOWS THE WEATHER THEIR? WE JUST FOUND OUT ABOUT HTE CLUB CASA MARITA. WE ARE SORRY ABOUT NOT WRITING BEFORE, BUT WE WILL WRITE TO YOU KNOW ABOUT GAMES. ARE THERE ANY 8TH GRADE GIRLS THERE? IF THERE ARE, PLEASE WRITE BACK TO ME.

YOUR FRIEND,  
MATT FROM ST. XAVIER

-----  
From the REAL WIZARD Mar. 22, 1989

Dear Matt from St. Xavier!  
You wrote that you need help with Super Factory! (Chico 89) I am indeed sorry that I did not answer you sooner, but I just woke up from a little nap. (I was inspired by my colleague Volshebnik to do some snoozing.) But now I am awake are ready to attend to important matters, such as playing Super Factory! So here is some help.

Many children find that Super Factory is much easier to do if you have a real cube around to use, so that you can see better how the rotations work. Do you have a real cube around?

Here's a hint that I have heard from other children: use the "analyze" option in the game. This helps you keep track of the rotation of the cube, too.

I suggest that you try making a cube that another child had designed. Then if you need help, you can write to that child for some hints or you can collaborate with him or her. Noah

Lidman, in Solana Beach, has designed a wonderful cube (ask an adult to show you his letter in "Cubes, #7) that you can try to make.

And of course, if you need further advice or hints or --after you've played Super Factory a while -- you have some hints yourself, you can also write to some other children who have played this game, such as Noah, or Paul Velikhov and Dan Massalsky in Moscow or lots of other kids!

With Wizardly regards from,  
The Real Wizard

-----  
From Moscow, February 1989

Hello Volshebnik,

It's raining here but the weather is nice. Today we played the Lemonade game. But we were not successful at all.

Volshebnik, please give us some advise.

Lena, Yulya

-----  
From Moscow, February 1989

Hello dear friends! Today I was working on the experiments in the botanical garden. We had special sheets with printed tables for the experiments. My assignment was to grow the tallest possible plant. I was growing a tulip. I specified the conditions: water, warmth and light, so as to grow the tulip of a maximum height. The largest height I got was 101.2. After that I made 23 more experiments. I did not change the conditions, but continued to grow tulips. There were different heights - for instance 98.9 or more, but the conditions were still the same - warmth light and heat. I took the sheets with the experiments home, I should bring an answer for the next lesson, I haven't thought of one yet. Here is a question for you: how come I changed nothing, but the heights came out to be different?

Sasha

Happy New Year, today is the old new year!!! Pavlik.

-----  
From Mocow Feb. 17, 1989

Dear David Carillo, Joe Cazaras, Noah Crawford!

I tried to grow your Super-Wizard-plant. Your maximum height happens with light level 5, water level 1, soil level 3, warmth level 7.

I tried it the way you specified. But my plant was even higher when I tried light level 5, water level 9, soil level 9, warmth level 7.

Try it. Bye! Talk to you soon! Misha.

Even our preliminary analysis indicates that while it is sometimes a struggle to get the kids to write because the actions involved are intellectually stressful (remember, "no strain, no gain"!) many letters reveal elaborations of ideas of the kind that entail reflective abstraction, precisely the activity we are attempting to induce. They also reveal a curiosity and consideration of each other that is a social-developmental goal of our work.

Preliminary evidence for kinds of products that the children can participate in can be found in the Fifth Dimension Forum, which is attached as an Appendix. The "Forum" provides examples of writing (such as a chain story) which we have not yet started to analyze along with indications of the cultural diversity of the environment as a whole.

### 3.2.2. Intra-site Communication

While communication between sites is an important tool in creating our after-school telecommunications activities, it is only part of the story. The children also engage in correspondence with their wizard. During the same period when the children were engaged in correspondence with far-off sites, their tasks within the 5thDimension often required a letter to the Wiz to explain something about a strategy or to give hints for other kids associated with separate 5thD activities.

The quality of writing that can be attained through this "close in" communication that is nonetheless spatially and temporally distributed through the Wizard is described in detail by Paul Hartwell, an undergraduate who played the role of the Wizard for the Boys and Girls Club (See section 3.3 for Mr. Hartwell's report). Paul found that he could group the letters according to different functional categories, which he could then use as a guide in creating his responses. The self-critical approach that Paul adopts reveals both the kind of educational experience that this work provides for undergraduates, how one intelligent undergraduate developed conceptually in the course of 10 weeks, and the kind of intelligence that was lavished upon the children by the Wizard. We like Paul's report especially for its ability to catch a whif of the quality of the 5thD as a tele-mediated, system of educational/pro-social activity. In addition, his functional scoring scheme is being incorporated into the booklet of standard procedures for creating a Wizard-like character in telecommunications activity with children, since it provides useful heuristic procedures for improving the quality of feedback that children receive. All together, the Wizard and the children exchanged more than 250 messages during the 8-week-long spring 5thDimension, from which Paul's paper and the example given below were drawn.

At times the staff and the undergraduates actively engaged the Wizard's help with an intractable social problem. The first example records attempts to engage the self-control of a little boy who is disruptive to the group and stressful to the students and staff participants.

After the Library site had been in operation for a few weeks, an eight year old boy named Ryan, who had been disruptive during the previous session, sought to sign onto his telecommunications account to see if he had mail from the Wizard. During the summer months the passwords in the accounts had been changed and this was Ryan's first attempt to log on after the changes. When he was unsuccessful, he was upset claiming that the Wizard had let him down. The adult present said it couldn't be so, and while

Ryan was busy elsewhere, signed onto the child's account and assigned it the password, "grumpy." He also contacted the Wizard who wrote a note to Ryan about his password.

Ryan was displeased with the change. In the discussion that followed the adult was able to quiz Ryan about the Wizard's possible motives ("Gee, have you been grumpy lately?") and to urge Ryan to see if cooperating with the others in the 5thD would induce the Wizard to relent and assign him his old password.

The next session, an undergraduate who had not been present for these events wrote the following observations in her field notes:

Ryan was a little boy transformed today. He was pleasant, focused, helpful, nice to be around. He is still talking about the Wizard having made his password, "grumpy". I was walking by as he was telling another adult about this and I said, "Why do you think he gave you grumpy as a password?" Ryan says, "I don't know, cause I was grumpy?" I said yes, I think word has gotten round to the Wiz that you have been grumpy lately. It was interesting to see the real impact that this message from the Wiz has. (V. Crawford, Oct. 20, 1989)

Social norms are introduced in a quite different way in the following letter to the Wizard where the child is initially disrespectful to the Wiz, and has to reflect on the nature of his behavior when the undergraduate appropriates an accidental failure of the telecommunications system to the Wizard's displeasure with being treated disrespectfully.

Dear Wizard,  
My name is Henry. I am 7 years old. What is your real name? Where do you live? I do not believe there is any such thing as a Wizard. I go to the Children's School. There is no such thing as a wizard. I am in the second grade....

At this point the computer connection was broken inexplicably. The undergraduate working with Henry reported...

"Well needless to say it couldn't have happened at a better time! I told Henry that I had no idea what happened but that the Wizard probably didn't like what he said about not existing, etc. so he hung up on us. Well, the look on Henry's face, as he stared at me in utter disbelief, made it almost impossible for Mike [site director] and me to keep a straight face."

### 3.2.3. When Intra and Inter Collide

One of the basic hypotheses of this work has been that it should be possible to construct a qualitatively new form of interaction between university and community if telecommunications was made the medium for new forms of joint interaction. At the same time, we were well aware at the outset that merely linking institutions by computer was very likely to lead to no change at all, or even provide new opportunities for conflict: everything depends on how the communication is organized around common goals.

At one level, evaluation of the hypothesis that new forms of interaction evaluated as positive depends on an existence of proof at the level of the system itself--it ought to continue to grow. This institution-level analysis is contained in the section on System Uptake, which follows.

Here we want to describe what happened within the community sites when, after many small and sporadic partial- interactions, we established daily ongoing communication between two sites in the USSR and two sites in the US outside of Solana Beach. Because Intra-site telecommunication experience mediated by the wizard proceeded by many months the initiation of Inter-site communication, the local systems were functioning as organic units. Mail flowed well to and from the Wizard. Writing, while sometimes grudgingly engaged in, was assumed by all to be a part of the 5thD. However, when, in order to accommodate differing daily schedules and modes of internal organization, the different sites started to interact, Solana Beach felt the impact of the change very accutely as disruption. As described in more detail in the report entitled "Abduction of the 5thDimension" in the Appendix , it required several weeks of tinkering by the adults before the within-site activities in Solana Beach was readjusted to accommodate the responsibilities of guaranteeing answers to far off places.

This and similar experiences in setting up joint activity at a distance have led us to focus with special care on the problems of achieving at partially overlapping goals that can be created across institutional boundaries of the kinds involved in our after-school activities. This is obviously a major issue with respect to continued growth of these activities and will be taken up in the appropriate section below.

#### 4.3. A Wizard's view of its tasks

The following essay is the term paper written by Paul Hartwell, who fulfilled the role of the Wizard for the Solana Beach Boys and Girls Club. We include it because it lays out a plausible set of categories for guiding adults playing a mediational developmental role of this kind. These categories are not described in fancy theoretical language, and they clearly arise from Paul's practical experience in the role. Nonetheless, they also illuminate several of the theoretical principles guiding the structuring of interactions at the sites and provide a good snapshot of the variability and educational potential of the this kind of writing for children in after-school settings. The essay also illustrates in various interesting ways the manner in which play and work infuse the activity of the adults, as well as the children, who participate in the 5thDimension.

WWWWWIIIIZZZZZAAAAARRRRRDDDDDRRRRRYYYYY

**A dissertation on the Wizard in two parts:**

- I. Mail, to the Wizard and from the Wizard**
- II. Ideas for the Wizard of the future**

Comm/Psy 116/128, final paper, Spring Qtr 89  
written by Paul C. Hartwell

What is it I want to write about?

The Wizard, of course.

Please elaborate.

Well, I acted as a wizard, thee Wizard, for the kids of the Solana Beach Boys and Girls Club's Fifth Dimension. That sort of makes me next of kin or something.

Yes, of course, but what do I want to say about it?

Mostly, that being "The Wizard" to those kids had an effect on me. It made me feel good... and it made me feel bad. It let me slip out of my skin for a time, to feel with another's touch, to see with another's eyes, to taste with another's mouth, perhaps to think with another's mind.

For anyone who is just a little puzzled about this business about a Fifth Dimension, and a Wizard, allow me to elaborate. The Wizard reigns supreme over the Fifth Dimension and its Citizens. What the kids get is a time and a place to play at activities, mostly via computers, in the company of peers, including a platoon of students from UCSD. The students are not there to "teach", but to prod the kids when they slow down or have trouble. Ideally, to help them find their own way through problems. Games and activities are not done at random and whim... the Wizard has seen fit to establish order in its realm. Rooms in the Fifth Dimension's maze contain two activities, and each activity may be performed at one of three degrees of difficulty; beginner, good, and expert. Completion of a task at a given level leads to consequences, and typically, the better a task is done, the more freedom the child has in determining where he or she will go next in the maze. Herein lies even more detail than I have explained, but this will suffice. In addition to the completion of a task, and before the child may progress, a letter must be written to the Wizard. The task usually gives the child some guideline of what to include in the letter. Often a letter should tell the Wizard how a child fared, what obstacles were met, what score reached, and what the child thinks about the game. The children are also invited to include more than just these, and many are quite fond of their Wizard. They inquire how the Wiz is, what sex the wiz is, how he/she/it looks... etc. This is my job, as a Wizard; to reply to the many letters that the children write each day.

One thing that became apparent, as I flitted about on the Wizard's wings, is that so long as there are placebo wizards, such as myself, the Wizard can be but human. The Wizard was subject to my moods and the many unpleasanties of my personal life. This has the side-effect of coming out in The Wizard's replies to the mail from the children. Hence, there were responses to the children that were good, and responses that were bad. First is a bad example:



Long time no see. I played Aztlan. I got to the year 15. from Chad Deuschle (age 9)

Hi Wizard,

Today we played Jennys Journeys. We liked it. It was fun. We had to go from the flower shop to the hat shop. We also had to go from the pet shop to the flower shop. I liked it. from Brian B. (Bettencourt, age 9)

I would say that skeleton letters are Brian's normal speed, but Chad usually writes better, even in the love letter category with the amount of space he devotes to pal-ing around with the Wizard. It is the complaint of students on site that often the kids don't want to write and a skeleton letter is the best they can get out of them. They also are not supposed to act as authoritarians toward the kids. Thus it is the duty of the Wizard to squeeze more and more out of the budding authors. This should be done gently, and with humor. Going back to my good example response and you should get an idea of what I mean.

The formal letter includes more than a skeleton, but the writing style is cramped, stiff. Generally, what is asked for on the Task card is given, in full, but in a dry, flavorless way.

#### MY TRIP IN MISSOURI AND NEBRASKA

by Richard Carrillo (age 10 or 11)

In 1886, I started in missouri with only 700 dollars to spend. I spent it wisely.

In Missouri, I killed 12 deer, 1 invader, and 1 wolf.

In Nebraska, I killed 5 deer, lost food and clothing, invited friendly invaders, and killed 1 wolf

Richard Carrillo is perhaps the archetype of the Formal Letter approach. A proper response from the Wizard needs to spur the author toward taking a different tack. Sure, everything was included, but the Wizard craves personality.

The Wise-Guy is one of the most difficult to deal with for the Wizard, especially if the perpetrator is one Vahid Fozi. One definitely needs to know the child in order to detect the sarcasm in the following:

Dear Wizard,

Im having fun with logo writer. I find it very fun. However terrapin logo kicks its butt. The flip side is a very convenient option. With it I can do many things that are useful.

vahid fozi (age 11?)

On the other hand, sometimes he can be a bit more blatant.

Wizard,

you have a weird mind

(vahid, age 11?)

The Wise-Guy is often the preferred style of the Wizard's Young Wizard's Assistants, the YWA's. They have been around the longest and feel quite comfortable about

writing the Wizard, even if they don't like to do it. I think that this style belies a lack of respect for the Wizard, which could mean also that the Wizard has not earned it. As in most situations, the Wizard should respond with a sense of humor. The Wizard is boss, and can tolerate teasing smartmouths so long as the dignity of the Wizard remains intact.

Often, the Wizard is asked favors of. Yes, the Wizard is benevolent and kind, but hand-outs and free lunches are not in the Constitution. Witness a fragment of this letter from Shawn Whitecotton, age 7:

Dear wizard,  
How do you look? Can you send me a copy of Breakout? If you do, send me a copy of Breakout and King's Quest.

I have chosen to divert such requests, or to pretend that the Wizard has misunderstood them. It seems cowardly not to face up to the requests and say no, but the Wizard doesn't like to step on toes. A typical reply might ask the child why he or she is asking for games that are there in the 5D. "Have they been stolen?"

The Love Letter is always a delight to receive. Typically, girls are more apt to spend more time writing to the Wizard than the boys, and the extra time spent shows up as talk of a more personal nature.

Dear Wiz,  
I'm 7 years old and no I'm not cold. I like computers a lot, but I want a bike for my birthday, which is May 28. I hope you will make me a mailbox sooooooon! wish I could know what you looked like and if you were a boy or a girl, but I think you're a boy, cause all wizards are boys. And another thing I want to know how old you are - 19? 16? - I think you're 16 because you sound nice. I think the magic you make on the computer is nice.  
GOOOOOOOOOOOOD BYYYYYYYYYYYYYYYYYEEEEEEEEEEEEEEEEEEEE!  
Love, Crystal Ann. (Damon. age 7)

The Love Letter offers the Wizard a perfect opportunity to make a good friend. One would suspect that the children most apt to banter with the Wizard would be the most likely to listen to the Wizard's requests. They might include requesting for more on-task information in the otherwise perfect letter.

The rarest letter of all is one that is complete. The children who write complete letters usually have a high degree of interest and involvement in the task, and are old enough to write well. This example is even more complete because it is co-written by two citizens.

Dear Wiz,  
We just played Spiderworld! When we first played we made a red square in the left hand corner of the spider's cave and it was pretty easy. We did that by typing letters which meant the colors and the directions that the spider could move. We tried to use Logo like instructions to make a chess board but that didn'tdefinitely work. We called for Tony, and he gave us a couple of papers on how to do it. The chess board had a pattern, red, step, blue, step... etc. The computer told us demonstrations that we watched. We chose one of them (we didn'tdidn'tdefinitely really BOTH agree on it) We changed different commands. Justin changed the color of the figure and Avishkar changed a right command to left and this messed us up. You need better instructions on the disk for the game. We still are not sure about what "add" and "subtract" mean, but we do know what they mean when you're not playing with the

computer.

Avishkar Tyagi  
Justin Greer

It is obvious from the letter that the two stuck to the task-card and that they enjoyed it. They included what they thought would improve the game, too. The Wizard needs to promote these letters, and reserve the best Wizard-magic for the replies.

In spite of my having rattled off my ideas about answering letters from the children, I cannot get over the feeling that the Wizard is not having as big an effect on the children as possible. True, many of the kids eagerly await replies from their Wizard, often for the funny things it may contain. But from an educational standpoint, I think some of the Wizard's magic is lost when replies come back after the game is over and done with. The Wizard often has some help or suggestions for the child, which goes by the way side if the child has gotten involved in the next game. By that I mean that if the Wizard is meant to help the children, how can it if replies sort of tag along behind them? I suggest that the Wizard be given a stronger role in the completion of tasks. John Dewey wrote something that I think has bearing on what I am getting at.

"Intelligent activity is distinguished from aimless activity by the fact that it involves selection of means- analysis- out of the variety of conditions that are present, and their arrangement - synthesis - to reach an intended aim or purpose. ...the principle of organization of activity in terms of some perception of the relation of consequences to means applies even with the very young. Otherwise an activity ceases to be educational because it is blind."

(John Dewey, Education and Experience, p. 84)

The Wizard could take a bigger part by one of two ways. The first being that the Wizard be on the line, live, while children play. They could then write to the wiz, and receive instantaneous feedback as to what more they could do. This has the drawback of necessitating spontaneous answering from the Wiz. Speaking from experience, it is much better to have some time to mull one's response over some. So, I suggest that each child or group of children working on a task do so for two days. On the first, they proceed as normal, then write the Wizard about what they did. On the next time, the reply from the Wiz will advise the children on how to proceed next. If the children make sufficient headway the first day, then there would be no need for any follow up to the task. This way also has the effect, probably, of creating more free time for the citizens. The time could be used to answer mail from far away places if they had finished early but were waiting for the next day's reply to know if they could go on.

From an educational standpoint, it makes sense to draw out activities over more time.

"when students spend time on tasks with high levels of success, their performance improves with increased time devoted to learning (Fisher, Berliner, Filby, Marliave, Cohen, & Deshaw, 1980). This evidence has made research on ways to increase the amount of time students spend on task an important topic for educational researchers."

(Michael Cole and Peg Griffin, editors  
Contextual Factors in Education, p. 15)

By having them wait for a reply from the Wizard, there is more certainty that the child will take away some good experience and learning from the activity. If it is apparent that the child is not getting the point, then the Wizard will be able to help more directly. Bear in mind, also, that there are varying levels of difficulty to accommodate younger or older alike. In fact, the Wizard may suggest to some older kids to try the activity again at a higher degree of difficulty.

I think it is agreed that, as the program now stands, the Wizard has a capacity for good-doing. As I see it, this can be increased by moving the Wizard's replies more into the foreground.

### **3.4. Parental conceptions of the Fifth Dimension**

by Carol Speaker

(a critical synthesis of papers by Sarah Banet and T. Michele Carver, Michael E. Duffy, Monina Nolasco, and Maria Benitez)

As the Fifth Dimension After School Educational Program looks ahead in planning its third year, it is helpful to look back and review the previous year in terms of successes achieved. One way in which this look back was accomplished was through interviews with the parents of children participating in the program. The focus of the interview was to assess the success of the Fifth Dimension program by interviewing the parents of the children. This gave us a perspective on how well the program has been received from the point of view of the parents and (as reported by the parents) of the children.

One parent from each family whose child attended the Solana Beach Boys' and Girls' Club (BGC) and the Solana Beach Library Fifth Dimensions was interviewed. At the Library site, a parent of every child who participated was interviewed- a total of 14 parents. For logistical reasons it was impossible to interview all Boys' and Girls' Club parents since this would have amounted to over 100 interviews. Instead, 10 frequent participants' parents were interviewed. As a result of this, the Library interview responses are complete and are much more representative of the site, while BGC responses are only a sample of the parent population and therefore reflect trends more than absolutes. Although the interviews for the BGC were not as comprehensive as those conducted at the Library, it is felt that the BGC interviews are representative enough to be used to compare the two sites.

Given that no emphasis was placed on educating the parents about the program, the interview was informative in revealing the parent's degree of understanding about the Fifth Dimension (5D). Secondly, the interviews were also important in evaluating the parents as a potential support group. A third outcome of the interviews was that they gave some insight into the kinds of backgrounds the 5D children were coming from. They provide documentation of possible reasons behind the differences in atmosphere and in attitude between the two sites. The differences have previously been described in undergraduates' field notes, but the interviews give a much better idea of who the parents are and what makes them and consequently the two sites different.

Interviews were conducted by undergraduates who had worked with the children in the 5D throughout the quarter. Usually one undergraduate conducted 3-4 interviews.

The undergraduates contacted the parents of their respective sites via telephone in all but one case (Library): this interview was conducted in person. Parents were asked a set of standardized questions including logistical questions addressing the parent's initial knowledge of the program and the child's means of transportation to the site. Other questions were designed to elicit responses about their understanding of the program and its underlying concepts, such as the role of the UCSD undergraduate and their interpretation of their child's involvement. The parent was then given the opportunity to offer any advice s/he might have for the further growth and continuance of the 5D.

### 1. Logistical Questions

The logistical questions asked were: "How did you hear about the Fifth Dimension" and "Do you have to make any special arrangements to get your child to the Boys' and Girls' Club / Library?" An overwhelming majority of parents at the BGC learned about the Fifth Dimension by virtue of their children being at the BGC for another activity while the 5D was in progress. One parent heard about it from a friend. The Library parents responded similarly; they were at the Library while the 5D was in progress or read about the program in a Library bulletin. Some Library parents also claimed to have heard about it from a friend or neighbor who frequented the Library. In response to the transportation question, almost all BGC children walk or ride the bus to the 5D. One father reportedly drives his child. In contrast, Library 5D participants are driven there by a parent.

**Discussion:** One important distinction must be made between the responses given for the first question. The majority of BGC parents learned about the 5D from their children who were at the club while the computer activities were going on, whereas the Library parents themselves went to the Library and discovered the 5D. This reflects not only the difference in location and type of site, but also gives an indication of the discrepant backgrounds of the BGC versus the Library children as a whole. The Library parents are patrons of the Library. These parents have both the time and the inclination to bring their children there to utilize the Library's services, which is what they were doing when they inadvertently discovered the 5D. In contrast, many of the BGC parents send their children daily to this after-school community club where the children can participate in numerous athletic and social activities until the parents come home from work. It is often only through the child describing his/her day at the club that the parent learns of the existence of the 5D.

The differences in transportation to the two sites further reflects the sites' locational differences as well as socially discrepant backgrounds of the children who attend the sites. There are physical restrictions at the Library which require a parent to transport a child there. The Library is located in a busy shopping center across the freeway from the local schools. Therefore, the Library is relatively inaccessible to these children without the active participation of a parent. In contrast, The BGC is located across the street from an elementary school and within busing distance of other schools. Many of the BGC children walk to the club or take the bus. Their parents either pick them up on the way home from work or they walk home from the club.

### 2. The Parent's General Conception

The parents were next asked, "What do you think the Fifth Dimension is all about?" At the Library the majority of parents answered that they assumed that the 5D was some sort of computer learning experience. Almost all of the parents whose children attend the library on Mondays and Wednesdays stated that they (at least originally) believed the 5D to be a type of "computer class". One parent was even a bit concerned that the technical aspects of computer use had not filtered home, and she was worried that her child had not "picked up" the information. This parent had only heard about the games. The parents of the Tuesday/Thursday children, however, had a different view of the experience although they continued to relate it to computers. Some said they believed the 5D taught about computers "on a larger scope- although I'm not sure what that scope is." These parents did not have the conception that the 5D was simply a "computer class", but they did not know exactly how the program was different. Others assumed (more correctly) it to be learning through computers to increase the children's logical thinking. This view was usually followed by the adult's opinion that the 5D was a research project that was underway at the University of California, San Diego. The remaining answers to the question were general views that the project simply involved playing games on computers.

At the BGC, most parents believed the 5D to be a learning environment involving computers. Most parents realized the play aspect involved, although some separated the two with descriptions such as, "It's a room where kids can play or work on computers." The rest integrated aspects of computers, games, learning and fun. Only one parent defined the 5D as a computer class.

After asking the broad question, "What is the 5D all about?", the question or a form of the question "Do you think computers are important?" generally followed. If the answer was yes, a supplemental question involving elements of play or social interaction was asked. Although most all the Library parents thought the computers were the most integral part of the 5D, many thought the social interaction was important as well- just not "as important". The few that were not interested in the social aspect of the program generally supported their answer by saying, "They get enough social interaction other places." A majority of the Library parents that thought the computers to be of highest importance usually qualified their answer by stating "computers are the future" or "computers are going to be a part of everyday life". Only one parent felt that computers and social interaction were equally important.

Similarly, BGC parents felt computers to be an important part of the future for their children. Several expressed pleasure at their children being given a chance to interact with computers at an early age. Two parents of developmentally disabled children were especially happy with the 5D since they felt computers could be an especially important part of their respective children' futures. A fewer number of parents responded to the question regarding the importance of social interaction, but those who did felt the social aspects of the 5D to be beneficial. One parent applauded the group efforts her son told her about, and other parents described social growth in their children which they attributed to the 5D.

Next the question "What do you think your child is getting out of the 5D?" was posed to the parents. Here the answers from Library parents were approximately split in half. Almost half thought their child(ren) were having pure enjoyment and fun interacting, while the other half mentioned the computer experience the kids were receiving.

At the BGC, parents answered similarly. About one third of the parents cited computer experience and learning as the main benefits received by their child. One parent said, "He's learning that learning can be fun." The remainder focused on social benefits such as peer interaction and increased confidence.

**Discussion:** In response to the first question, "What do you think the 5D is all about?" an interesting distinction between the Library and BGC parent responses is seen. Although all parents mentioned the utilization of computers, the Library parents largely believed the 5D to be either a computer class or have some type of basic educational purpose. The majority of BGC parents, in contrast, acknowledged the play element as well as the educational basis. These differing conceptions can be explained by one or both of the following two reasons: First, it seems likely that the context within which the 5D is set has an effect on how it is perceived by outside observers. The BGC is a boisterous and crowded club where children are relatively unconstrained and free to participate in dozens of different activities. A parent seeing the 5D in this setting would naturally view it as playful in nature. But at the Library, where most people come to study or do research, the parents would equally as naturally see the 5D as a more serious and educational activity. A second explanation could be that the parents perceive the activity according to their ideals about what types of activities they would like their child to participate in. This is a likely possibility at the Library site where none of the parents mentioned any understanding of the 5D beyond a strictly educational one. Many of the parents whose children attend the 5D at the Library are working professionals who set high goals for their children. They see the 5D as an educational experience that will likely help their child in the future, and not as a fun or social activity. One parent who, during the course of the interview, learned of the social interaction responded with the following: "(My son) has been using computers since he was three- that is his father's field- and I thought that this would be an extension of this- that is the reason I signed him up...I thought there would be more technical information."

As with the first question, the second question dealing with the importance of computers and social interaction reflects parental differences between sites and consequently between the sites themselves. Parents of both sites concurred on the importance of computers in their children's futures, but were split on the importance of the social interaction. At the Library, where parents earlier expressed their belief that the 5D was a purely educational activity, they now followed the same line of reasoning and largely dismissed the 5thD's social aspects. BGC parents, who earlier defined the 5D as involving elements of play as well as learning, now expressed their support of the social elements of the project. Both groups consistently followed their earlier statements.

The final question, "What do you think your child is getting out of the 5D?" revealed some inconsistent remarks mainly among the Library parents. Of these parents, whose children joined the 5D for reported educational purposes, half now felt their child was receiving social benefits. Most parents were not aware of their self-contradiction during the interview, but a few did mention it immediately following their answer to this question. The same contradiction exists among some of the BGC parents, although to a lesser degree since many more of these parents initially identified the social aspects of the 5D as important.

### 3. The Role of the UCSD Undergraduate

The next question was "What is the role of the UCSD student, and why is it important?" A majority of the Library parents interviewed perceived the students to be a "teacher" or "guide". A few, however, thought they were fulfilling some kind of internship or school requirement. This perception of the UCSD student as a teacher or guide led them to believe that the given role was important to "help the kids if they get stuck" or to "keep the kids on the right track". Another interpretation of the students' presence was as that of a role model for the children. One parent said, "role modeling is very important at this age, interacting with college students is important for this reason."

Responses were much the same from the BGC parents. The most popular response was that they too viewed the undergraduate in a "teaching" role. Other parents saw UCSD students as helpers. One parent stated the role (most accurately) as "a facilitator".

**Discussion:** Both groups of parents have a fairly weak understanding of the role of the UCSD undergraduate in the 5D. Additional lack of clarity on this issue may result from the fact that given the complex nature of the role, even the student her/himself may have problems within it and this confusion of responsibility may then be transmitted to the child or the parent. In responding to this question, the parents are merely reflecting what they have seen for themselves or have heard from their child(ren).

#### 4. Benefits to the Children

The next questions asked drew away from the parents' conceptions and moved toward their interpretations of their child's' thoughts on the 5D. The first question asked was, "What does your child like best about the 5D?", and to this question the answers varied decisively. However, at the Library the most frequently given answer was "playing computer games". Coming in second were two different answers, which included the wizard and wizard mail, and interacting with the UCSD students. Lastly, a few parents thought their children liked the fun and socializing most.

At the BGC, computer games were deemed the most popular attraction for the kids by a narrow margin. Close behind was the wizard and the wizard mail. One parent thought her child enjoyed the social aspects most.

**Discussion:** This question gives a lot of insight into how the 5D is being perceived by the children themselves. Not surprisingly, children at both sites enjoy the computer games the most. On a fundamental level (which is the children's level of understanding of the 5D) this is what they come to the 5D for, so it would be expected to be the most popular response. At both sites the wizard and wizard mail were second in popularity among the children. This is noteworthy for the reason that it is often a requirement of a task card to write to the wizard before playing another game. Clearly many of the children see writing to the wizard as an enjoyable activity rather than as a task to be completed. This is an unexpected response since many undergraduates field notes report children at both sites resisting writing to the wizard and avoiding it whenever possible. At the Library, interacting with UCSD students was mentioned as often as the wizard and wizard mail. One reason for the lack of this response among the BGC children could again be the informal nature of the site. The BGC children come and go at irregular intervals, which does not allow them the opportunity to form as many friendships with the undergraduates as the Library children do. Also, at the BGC the undergraduates have to compete with other activities which can be very distracting and draw the child out of the interaction that is taking place.

### 5. Advice For the Fifth Dimension

Two questions were asked of the parents: "Do you feel it would be useful to continue the 5D?" and "Do you have any advice for the further development of the 5D (or some variant of this)?" At the Library, an overwhelming majority of the parents answered "yes" to the first question. Many of the parents mentioned that it was important that the project remained challenging for their children. Although a great deal of the children reported the fun they had while at the 5D, it was clearly important to the parents that they were mentally stimulated in some way; that it was not simply a "play time". Other parents mentioned that it would be useful to publicize the program more. All in all, the parents seemed to think the coordinators of the 5D were doing a good job, and that it was a wonderful idea to continue.

All the BGC parents concurred that the 5D should continue in the future. The parents suggestions were widely varied. They ranged from the idea of advertising to draw in more kids, to using IBM computers instead of Apples since most of the children's contact with computers in the business world will likely be with IBMs. (The later comment came from a computer programmer who also felt the children should be introduced to computer literacy via operating systems). Another suggestion was to use contests or rewards to appeal to more children.

**Discussion:** In response to this question, many of the Library parents focused on the importance of the 5D offering their children a challenge. This is consistent with their past responses emphasizing the educational basis of the program. It also provides further evidence of the Library parents' deep involvement in their children's activities.

In contrast to the Library, the majority of BGC suggestions focused on how to draw more children into the program. This is most surprising, since the BGC (and the Library) has a waiting list of children wanting to participate. In fact, many days the BGC is forced to turn away children. One possible explanation behind this paradox lies again in the situational influences at work in the BGC. To a parent who sees the 5D within the larger and much more crowded club, it may be that the 5D seems small and lacking participants. The parent fails to realize that the 5D is in fact working at full capacity and only seems small in comparison to the other numerous club children participating in their own activities.

### General Discussion

Overall, the parents seem pleased with the 5D program. Most problems, if any, expressed in the interviews stem from the parent's ignorance of various elements within the 5D. It appears that the 5D has a definite support group of parents, although the two sites appear somewhat divided in their degree of support (or at least their degree of support expressed). Library parents are much more involved and concerned as a whole and consequently are more demanding in their expectations of the project. It appears from the BGC interviews that these parents have not reflected on the project as much as Library parents have. Therefore the BGC responses seem to be lower in content and perhaps quality as opposed to the Library comments- although the BGC is still supportive of the 5D. The children's views did not vary: all the participants loved the 5D.