

**Ecologies of Parental Engagement and Preservice Science Teacher Education:
THE DESIGN AND DEVELOPMENT OF A MULTIMEDIA CASE-BASED ENVIRONMENT
“PARENTS”**

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Introduction

This paper discusses the design and development of a multimedia case-based environment, called PARENTS, for use in preservice science teacher education. PARENTS is being developed as one of the various products that will be used to communicate the knowledge, which is currently being generated by the “Ecologies of Parental Engagement” NSF-funded project (REC 9980592) (Calabrese Barton & Drake, 2000)- an ongoing project that examines in theoretically rich and practice-based ways, the parental engagement in high poverty, urban elementary schools that are active in implementing reform-based science education - to a diverse audience: preservice teachers, school actors, practitioners and researchers, through an interactive multimedia environment. In the following sections we provide an outline of why and how such an environment was developed along with the rationale and principles that guided its design.

Parents, Teachers, and Science Education:

PARENTS: An attempt to bridge a gap in Preservice Science Teacher Education

The limited research on parental engagement in schooling reveals a deficit model relationship between teachers and poor urban parents. That is, many teachers consider low-income parents to be “deficient” despite their general intentions to be helpful (Davies, 1988; Delgado-Gaitan, 1996). The parent-teacher relationships might seem cordial but often are distant (Carrasquillo & London, 1993) and even hostile, as a result of long and complex histories of miscommunication and school failure (Wolfendale, 1989; 1992). This deficit model of relationship places teachers and parents into a cycle of blame. Cullingford (1996) states that when teachers are faced with rebellious students, often blame parents’ failure in teaching their children respect and proper behavior. On the contrary, many urban parents, frustrated by the decay in society and in schools, blame the teachers -and the schools in general- for the low academic performance of their children.

The “cycle of blame” is also found by other studies, which show that teachers often view children’s failure in school as a responsibility of the parents (Swap, 1993). Schools administrators and teachers favor parents who attend school functions (i.e. conferences)

regularly and view those who do not as uncaring (Wolfendale, 1989; 1992). In addition, Swap (1990) reveals that despite the parents' interest for more participation in their children's schooling, many teachers are satisfied to have parents remain in "bake sale" roles.

Furthermore, other research studies reveal a number of barriers that poor, minority, and immigrant parents are experiencing in their attempt to be involved in their children education. Henry (1996) and Funkhouser & Gonzalez (1997) describe barriers such as the reluctance of teacher to allow parents' participation, biases and prejudices on linguistic or cultural differences as well as the school's -or the families'- unwillingness to collaboratively work towards a cultural change. Additional obstacles to parental engagement are considered the limited formal education and the deficient cultural or social capital of the parents, and the conception of parents and teachers roles (Samaras & Wilson, 1999). As a result, parents often end up with a school-controlled "laundry list" of ways they can be more involved in their children's education.

Nevertheless, the research around parental involvement in education provides substantial evidence that this involvement positively influences student school success (Dodd & Konzal, 2000a, 2000b; NRC, 1987, 1996). Hyde (1992) indicates positive impacts such as a) students and parents communicate about school more often, b) parents sharing feelings of accomplishment, c) increase in students' self-esteem, and d) student-staff and school-parent relationships improved. Moreover, other studies has shown fewer student referrals and classroom behavior problems (Flaxman & Inger, 1991), higher student attendance and high school completions (Swap, 1987), fewer student failures and higher student grades (Brandt, 1989), and more positive student identification with and acceptance of teachers (Comer, 1988). More importantly, these studies have indicated that parents do not have to be well educated in order to help their children with school.

Unfortunately, in regard to the field of science education there is little research that focuses on parents and urban poverty. Recent studies show that when underprivileged urban parents want to help their children with school science, they either do not feel comfortable with their knowledge of science (Scribner-Maclean, 1996) and of how school works; or even when the

parents do have some knowledge about science, it is often inadequate (or viewed as inadequate) for the purposes of schooling (Calabrese Barton et al, 2001; 1999; Belfiore & Barton, 1999). Furthermore, the level of alienation that many parents have from their children's schooling is due not only to low levels of scientific literacy but also due to their own negative schooling experiences (Fine, 1991; Valdes, 1996).

Research evidence also shows that participation and support by parents has a positive impact on student achievement and attitudes towards science (Fleer & Rillero, 1999; George and Kaplan, 1998; Osborne & Collins, 2000). More specifically, when parents feel empowered with school and with science, then they more readily provide guidance and support in their children's science education (Thompson & Cittadino, 1991; Marino & Hammond, 1998; DeMerchant, Lytton & Lytton, 1995). This has shown to be a particularly important influence on increased student achievement, especially when parents learn to be advocates in standards-based science instruction (Education Trust, 2001). These studies also have shown that children learn to do and use science more quickly and confidently when they do science-based activities with their parents at home.

Lastly, several studies have documented the ways teachers can involve parents in their children's scientific and technological discoveries both in school and at home (Feely, 1994; Fuller, 1996; Geake, 1993), including helping to design supportive home-based experiences. Fuller (1996) indicates that these types of initiatives open channels of communication between teachers and parents that potentially impacts both what happens at home and at school.

The **“Ecologies of Parental Engagement” [EPE]** project attempts to bridge this gap by providing a deeper and comprehensive framework for a critical understanding of parental engagement in poor urban schools that initiate reform-based science education. More specifically, the focus of EPE is on parents in poor urban communities and the roles they play in elementary schools that are active in implementing reform-based science education. The project's central goals are to reveal and analyze:

- The beliefs, actions, and practices of the parents related with science education

- The sustaining relationships built by and within parents as well as with other actors of the school (teachers, administrators, their children) and the community.
- The ways that the above findings inform the development, refinement, and implementation of science education reform initiatives that take place in poor urban centers.

We should clarify that the term “parent” refers to the broader notion of “caregiver”: the project’s participants were not all the actual "parents" per se; some of them were aunts, grandparents, or older siblings in charge of the children care.

Considering the importance of parental engagement in the education and science education of their children, a widely consistent message in recent science education reform documents (AAAS, 1989, 1993; NEG, 1999; NRC, 1996, 2000; NSTA 1998), we come to ask how do the preservice teachers -and specifically preservice science teachers- think or what they know about the issues of parental engagement in high poverty urban schools. The challenging lack of any current research study that addresses the theme of preservice science teacher education in relation to the parental engagement, along with the data that have been generated by the “Ecologies of Parental Engagement” project, illuminate the need of designing the PARENTS learning environment.

Focus and Purpose of PARENTS: A Multimedia Case-Based Environment for Preservice Teachers

PARENTS is a multimedia case based learning environment. The main purpose of designing and developing the PARENTS environment was to help preservice science teachers explore and reflect on the themes of parental engagement in high poverty urban school settings. More specifically, through the use and interaction with this environment, we aim to help preservice teachers to:

1. Identify issues, problems, and ideas that are embedded in the multimedia environment by having them pose their own **questions** or **dilemmas**.
2. **Interpret** those questions from multiple perspectives, using the various information resources provided in the product.

3. Form their initial **conjectures** around the issues they identified and explored.
4. Provide **evidence** and supporting information, gathered throughout their interaction with the environment, that will help them shape informed suggestions or solutions to their initial questions or problems as well as other “problematic situations” introduced by the system itself.

Beginning with these goals, our challenge was to design and develop a product that could be integrated into a preservice education course (preferably with preservice science teachers), and serve as both a starting point and a resource for exploration, reflection, and discussion of the aforementioned issues. We expect that implementing and testing a prototype version with a small number of preservice science teachers will provide valuable insights to our main research questions:

- How preservice science teachers’ beliefs and ideas about parental engagement in poor urban school settings crafted, mediated, or expressed within a graduate course that draws upon the PARENTS multimedia environment?
- What are the a) design features and functions, and/or b) content parts of such an environment that frame/enable/enhance student’s thinking about parental engagement in poor urban school settings? How (in what ways) this was achieved/done and to what degree? How each feature/function and/or content part contributed to students’ thinking?

Our prototyping approach has relied upon two complementary frameworks: (1) Development Research and (2) Constructivist Case-based Environments. We describe each of these influential frameworks below, pointing out how they have framed our prototype.

(1) Development Research

In particular, we have grounded our research in the theoretical framework of “development research”, that originated by Ann Brown (1992) and Alan Collins (1992), and further discussed by Van den Akker (1999). In an analytical review of research methodologies in the field of instructional technology, Reeves (2000) provides a diagrammatic description of the “development research” (Figure1):

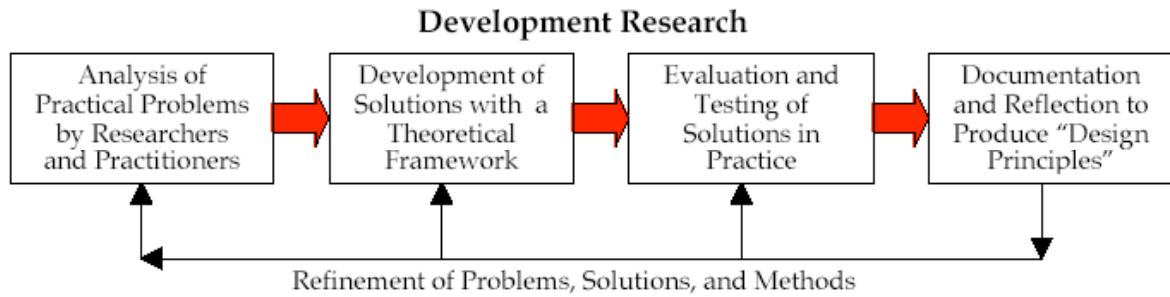


Figure 1: Development approach to instructional technology research
(taken from Reeves, 2000)

Van den Akker (1999), as quoted by Reeves (2000), offers the essence of development research, in juxtaposition to the traditional empirical approaches to educational research:

More than most other research approaches, development research aims at making both practical and scientific contributions. In the search for innovative ‘solutions’ for educational problems, interaction with practitioners.... is essential. The ultimate aim is not to test whether theory, when applied to practice, is a good predictor of events. The interrelation between theory and practice is more complex and dynamic: is it possible to create a practical and effective intervention for an existing problem or intended change in the real world? The innovative challenge is usually quite substantial, otherwise the research would not be initiated at all. Interaction with practitioners is needed to gradually clarify both the problem at stake and the characteristics of its potential solution. **An iterative process of ‘successive approximation’ or ‘evolutionary prototyping’ of the ‘ideal’ intervention is desirable.** Direct application of theory is not sufficient to solve those complicated problems. (pp. 8-9)

We have proposed a solution (the trial version of PARENTS), which we have based on a tentative framework of design principles. We consider the research activities of this study as ways to improve PARENTS, in a continuous effort to come up with the most optimal version. The documentation and analysis of the research data, which is currently in progress, will inform all our steps throughout this design process.

(2) Designing a Constructivist Case-Based Environment

Our attempt to create a design framework for PARENTS has also been informed by relevant theories from the field of instructional technology design as well as from major studies that addressed similar tasks. Constructivism and Case-Based Instruction in Teacher Education –

along with the goals that we have previously set- are two main themes that guided the design of PARENTS.

Constructivist Learning Environments

The design of learning environments has been a popular field in educational research; a scholar will nowadays encounter with various definitions of what is a “learning environment”, as well as a plethora of models of its design. This field belongs to the relatively new discipline of instructional design: the attempt to define effective methodologies of designing instruction. Both the development of the personal computer during the last four decades, and the impact of constructivist learning theory shaped the focus and the principles of the design of learning environments. Major research projects in this field are now defining these environments as computer-based (or digital) constructivist learning environments. Wilson (1996) provides a general definition of a constructivist learning environment: “*a place where learners may work together and support each other as they use a variety of tools and information resources in their guided pursuit of learning goals and problem-solving activities*” (p. 5). In other words, learning is viewed as an active procedure where the learners construct meaningful interpretations, drawing upon their background knowledge and on the resources and activities provided by the computer-based environment.

The application of digital technology to education has produced a substantial rethinking of how educational experiences can be designed and delivered to more effectively meet the individual needs of learners. The ideals of constructivist learning theory that emphasizes the importance of grounding learning in the intrinsic interests of students and building on their prior knowledge in a way that supports their problem solving goals has recently become of ever increasing importance in contemporary education (e.g., Bodner, 1986; Anderson, 1992, 1997). Computer-based education promises to enhance our realization of these goals by providing a learning interface where the learner has much greater control of information access and greater autonomy in selecting the range of experiences to promote learning, especially those aspects that are uniquely important to the learner (Bork, 1987; Harasim, 1990; Duffy and Jonassen, 1992; Romiszowski, 1992; Jonassen, 1996).

The design of the environment we have been developing is grounded in the learning principles of constructivism, a widely accepted philosophy of learning. Jonassen, Peck, & Wilson (1999) condensed what contemporary constructivists believe into a number of fundamental statements. We summarize, in brief, these principles:

- In the attempt to make sense of their world, individuals construct their own representations or models of their experiences. Thus, knowledge is constructed, not transmitted, and is embedded in the activities and interactions that we have had.
- The knowledge we construct is anchored in and indexed by the context in which the learning activities occur (Situated Cognition - Brown, Collins & Duguid, 1989).
- Since each individual has a unique set of experiences and beliefs, the meaning-making process produces perceptions that are also unique to the knower. Therefore, there are multiple perspectives on the world, which are directly related to the cultural history of the individual.
- Meaning making is prompted by a problem, question, confusion, disagreement, or dissonance and so involves personal ownership of that problem. This ownership makes the constructed knowledge more relevant, important, and meaningful to the learner.
- Knowledge construction requires not just a series of activities, but also articulation, expression, or representation of what is learned (experiences and understandings).
- Learning is a socio-dialogical process (Duffy & Cunningham, 1996). That is, meaning may also be shared with others, so meaning making can also result from conversation. Scardamalia & Bereiter (1993) state that this social dialogue effectively occurs within knowledge-building communities.
- Meaning making and thinking are distributed throughout our tools, culture, and community. Ideas are shared, discussed and accepted or agreed upon within any knowledge-building community.

Cases and Case-Based Instruction

Another important aspect that we had to decide upon was the nature of the content of this constructivist learning environment. The brief overview we are providing below explains why the field of case-based learning and instruction was an appropriate way to respond to the goals PARENTS. As a core component of this environment we considered a set of cases, presented in multiple formats (video, text) that will illuminate the issues of parental engagement in poor urban education settings and will guide the preservice science teachers into a constructivist exploration of this multimedia environment.

Case-based instruction in teacher education is a relatively new field in educational research. In a comprehensive review of the use of cases and case methods in teacher education, Merseth (1996) draws upon the work of Doyle (1990), Lee Shulman (1986, 1992), Shulman (1992) and Sykes & Bird (1992), and categorizes cases in three groups: a) cases as exemplars, b) cases as opportunities to practice analysis and contemplate action, and c) cases as stimulants to personal reflection. For the purpose of this study, the cases we have developed and incorporated into PARENTS may be considered to fall into the last two categories; we aim to foster preservice teachers' reflection and critical thinking around parental engagement. Furthermore, these multimedia cases will serve as a basis for teachers to analyze, construct interpretations, and propose solutions to problematic situations.

A growing body of research has been documenting a number of advantages of using cases and case-based multimedia learning environments in teacher education (i.e. Merseth & Lacey, 1993; Lacey & Merseth, 1993; Merseth, 1996; Lampert & Ball, 1998; Koehler & Lehrer, 1998; Lehrer, Petrosino, & Koehler, 1999; Horvath & Lehrer, 2000). Van den Berg & Visscher-Voerman (2000) summarize findings of such studies and suggest that multimedia cases offer educational advantages for (prospective) teacher learning as they “stimulate an active learning attitude in learner controlled environment; yield the possibility to revisit classroom events in order to make sense of them; show the cases in myriad perspectives; offer procedural support for instructional design and classroom teaching; lessen the gap between theory and practice, by giving practice a more profound and integrated position into teacher education programs” (p. 6).

The non-linearity of multimedia (or hypermedia) learning environments such as those developed by Lampert & Ball (1998) is an enhancing factor to the effective use of cases. As Putnam & Borko (2000) explain, this non-linearity as well as the abilities a) to “visit and revisit various sources of information quickly and easily”, and b) to “build and store flexible and multiple links among various pieces of information, allow users to consider multiple perspectives on an event simultaneously” (p. 8). This “Cognitive Flexibility Theory” (Spiro et al, 1991, 1992) principle is also included in our design of PARENTS.

Yoon et al (2002) mention additional evidence that support the use of cases and case-based instruction in both preservice and inservice science and math education programs. They are referring to studies (Abell, Bryan & Anderson, 1998; Barnett, 1998; Benzce, Hewitt & Pedretti, 2001; Harrington, 1995) that indicating teacher learning outcomes such as higher order reasoning, reflective thinking, decision-making, strategic inquiry, and collaboration.

The above advantages and outcomes are relevant to our design purposes and are also supporting the design framework that we are describing in the following sections.

A first look at PARENTS

At its current stage of development PARENTS consists of five main components (Figure 2): a) the *Introduction* and b) *Challenge* pages that set the stage for a purposeful and intriguing exploration, while suggesting the task and role of the users, c) the *Parents* page, a place where users “meet” the three parents who are presented in this environment: they can read and view their multimedia *Portrait* as well as *More Information* about the school each parent’s children attended, d) the *Cases* main page, the core of PARENTS: there are three multimedia cases that relate to each parent, along with additional video commentary from the parents on issues that are relevant to the cases (*Story Points*), and e) the *i-Journal* component: a very helpful note-taking and note-organizing electronic pad where the users could type, save and retrieve their notes.

Additional sub-components of PARENTS include a) the *Other Perspectives* pages, where we provide our research group view on the issues discussed by each parent, and the conjectures that the writing of each case was based upon. A visual *Help* guide to the system is also provided.

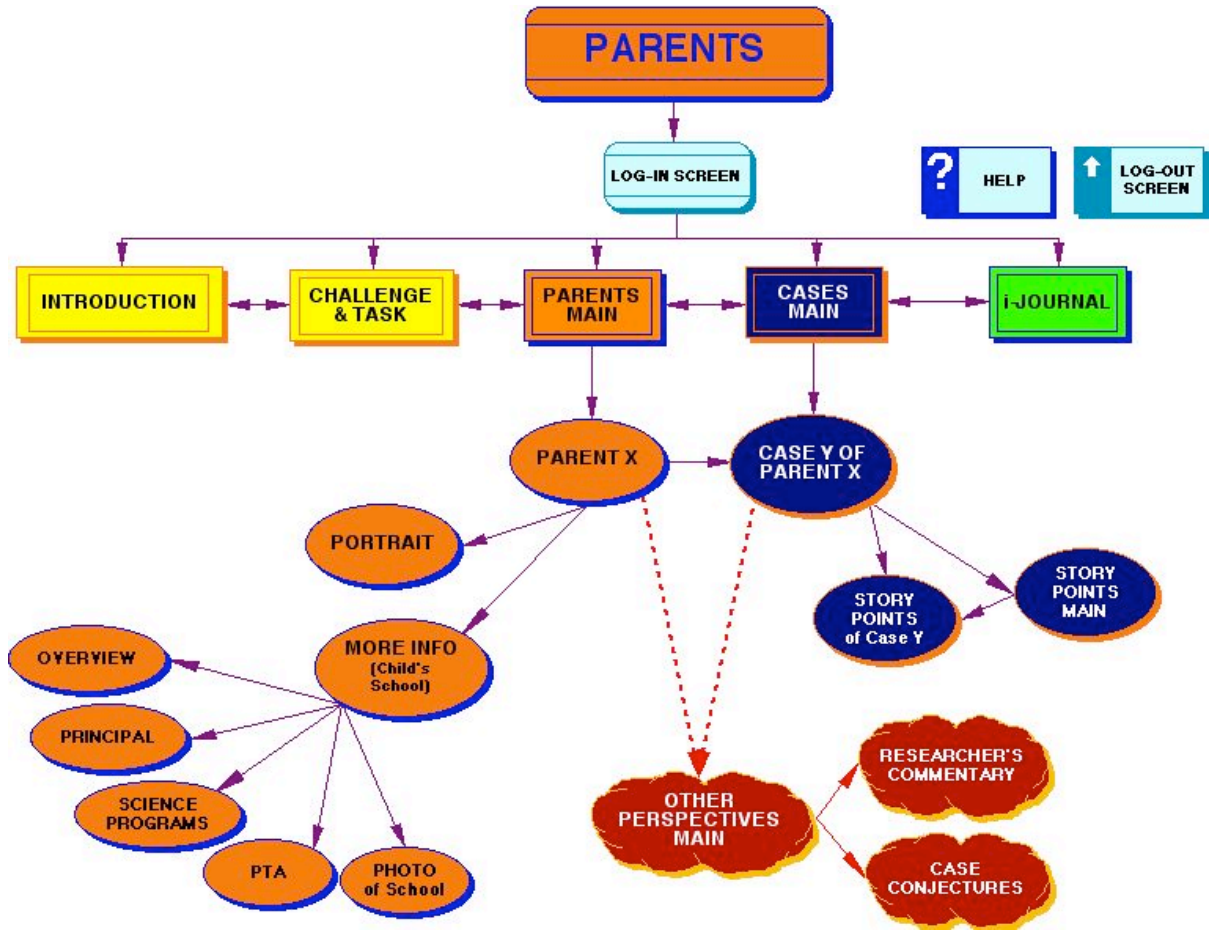


Figure 2: The system map of PARENTS

Design Conceptual Framework

Drawing upon constructivist beliefs and the advantages from the field of case-based learning and instruction, below we describe a set of principles that have guided the design of PARENTS. These principles appear in a variety of constructivist learning environments, but we group and present them in a way that serves the purposes of this study, while describing the way these principles function in the current version of PARENTS. These design principles are: 1) Authenticity, 2) Interpretation and Argumentation Construction, 3) Multiple Perspectives, 4) Rich, Multi-modal, Non-Linear Information Resources, 5) Scaffolding and Support, and 6) Multimedia Case-Based Learning and Instruction.

1. Authenticity

The need to present learners with authentic tasks and provide them access to authentic information is essential in constructivist learning environments (i.e. Black & McClintock, 1996; CTGV, 1990; Brown, Collins & Duguid, 1989; Bednar et al, 1991). Jonassen (1999) suggests that authentic problems are those, which represent a meaningful challenge to the learners and engage them to think like a member of the practice community. Schank et al (1993) also stress the learning benefits of engaging learners in authentic tasks. For our purposes, the users of PARENTS will be faced with roles and challenges that will be of real interest: they will adopt the role of a teacher in order to explore authentic cases of real parents discussing issues of parental engagement in schooling. This role is described in the very first screens of the PARENTS: the *Introduction* (Figure 3) and the *Challenge* (Figure 4), where we encourage the users to read and reflect upon the cases, to gather information from the parents' stories, comments, and experiences, and suggest how them, as teachers, would respond to the issues that emerge from the cases and stories (both the *Introduction* and *Challenge* are presented through a video and a text format - see Appendix 1).



Figure 3: The “Introduction” screen of PARENTS

Moreover, we have the users faced, right from the beginning, with sample questions that were raised by the parents themselves; the parents whose stories, voices, struggles and experiences are presented throughout this multimedia environment. Given that the users are teachers-to-be, they will encounter real-life situations in a purposeful and motivating way (Reisbeck, 1996). Furthermore, by having the *Introduction* and the *Challenge* as their starting point, all the users will have a shared, contextualized experience – an anchor – which could be used a reference point throughout the use of PARENTS in a course, or could be revisited by each user at any stage of their exploration. In this way, learning will be anchored in realistic and relevant context (Bransford et al, 1990; Honebein, 1996; CTGV, 1997; Schwartz, Lin, Brophy, & Bransford, 1999).



Figure 4: The “Challenge” screen of PARENTS

2. Interpretation and Argumentation Construction

In their approach to constructivist design, Black & McClintock (1996), emphasize the importance of having “students construct interpretations of observations and construct arguments for the validity of their interpretations” (p. 26). Instead of using the term “learning environments”, they refer to designing “study support environments” and they state that “the core of study is the hermeneutic activity of constructing interpretations” (p. 26). We expect the preservice teachers to act as “investigators” and problem solvers in a realistic scenario, and generate learning themselves. They will be required to “engage in argumentation and reflection as they try to use and then refine their existing knowledge [and beliefs] as they attempt to make sense of alternate points of view” (CTGV, 1993, p. 16). The current version of PARENTS provides a very important tool that facilitates the user’s task: the *i-Journal* (Figure 5).

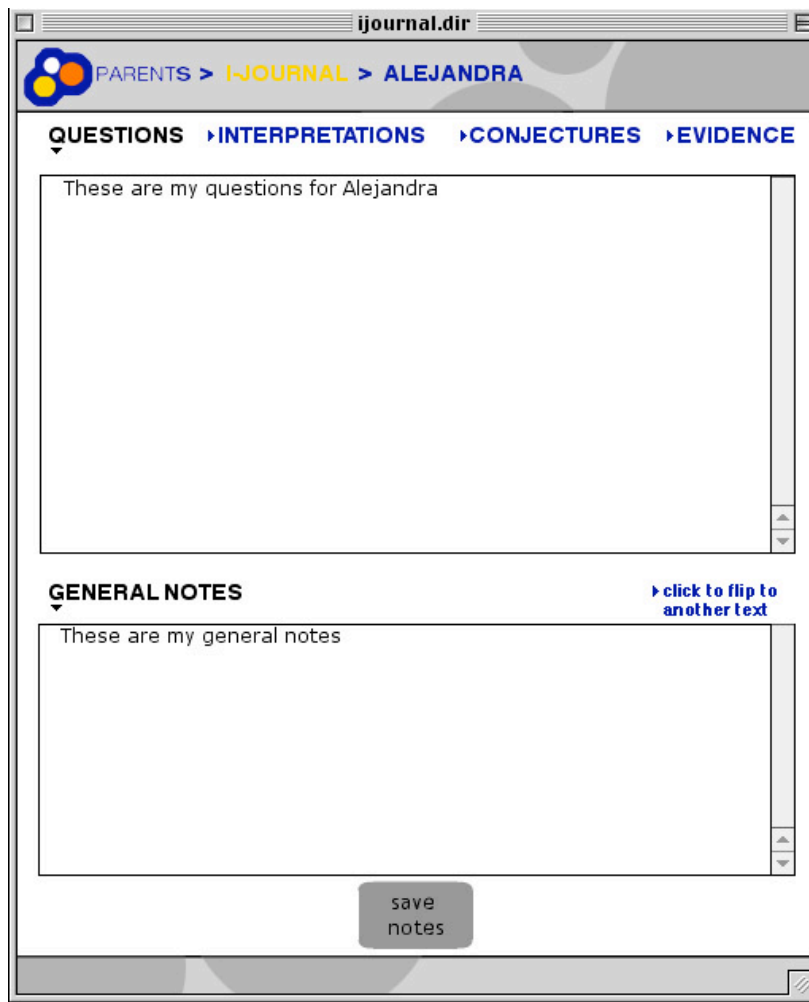


Figure 5: The “i-Journal” component of PARENTS

The i-Journal is the user's electronic pad: a digital note-taking and note-organizing tool. It will help the preservice teachers record, save, and retrieve their notes at any stage of their exploration. In order to further help the users we structured the i-Journal in accordance to their *Task* (see Appendix 2): for each parent (currently there are three parents presented in PARENTS) they will have a text window that addresses each of the main theme categories of notes: questions, interpretations, conjectures, and evidence. Also, a General Notes window will be available, where users could type their draft thoughts or any uncategorized notes. The i-Journal also allows the user to choose which two text windows are going to be active in their screen: i.e. a user may want to revisit their Interpretations notes while typing something in their Conjectures notes, etc). In this way, we encourage, but not enforce, the user to follow a semi-structured process of constructing and recording their thoughts and ideas. This design decision is in accordance to the main goals of this learning environment (previously noted). On the other hand, the preservice teachers may or may not choose to follow the i-Journal structure and decide to organize their notes in their own personal way by using the General Notes text window.

3. Multiple Perspectives

One of the most emphasized pedagogical goals of constructivist learning environments is to “provide experience in and appreciation for multiple perspectives” (Cunningham, Duffy, & Knuth, 1993 and Knuth & Cunningham, 1993, cited in Honebein, 1996, p. 11). Providing multiple perspectives or approaches to the problems or issues that will be examined by the learners, is directly related to an important model of designing learning environments: the cognitive flexibility theory (Spiro & Jehng, 1990; Spiro et al, 1991, 1992). According to this model, multiple perspectives are provided in order to convey the complexity that is embedded in the knowledge domain, and to illustrate the interrelatedness of the ideas.

The users of PARENTS could access multiple representations or analysis of the issues that will be derived by the cases of parents, as well as commentary from other actors in the school settings. Once the preservice teachers view their challenge and task, they could “meet” each parent presented in this multimedia environment (Figure 6), first by viewing the

parent's "Portrait": a document that will present each parent's biographical/family information, her educational background, and labor/work background information (see Appendix 3). Short video clips (of the parent talking) related to her portrait are also provided (for 2 of the 3 parents).



Figure 6: A Parent's Portrait page (note: Alejandra's page is shown here) with links to the related "More Info" and "Cases" pages.

Moreover, at every screen of each parent there will be available additional contextual information (information about the school the parent's children attended grouped under a general link called "More Info") that will help the users form their interpretations from multiple perspectives:

- a) an overview of the community setting that the school is located (a photo of the school is also available)
- b) information about the principal of the school and his views on science education and parental engagement
- c) a description of the science education reform program of that school
- d) P TA (Parent Teacher Association): the synopsis of the parent liaison work in the PTA of that school.

In order to offer additional perspectives to the users, we included in the current version of PARENTS a section named “*Other Perspectives*” a place where they could access

- a) the researchers’ commentaries for two of the three parents. There, the users will have the chance to read how the researchers of our group worked with that parent, how and why they chose to write the cases and their overall analysis of their experience. In future versions of this environment we will include the views of other key actors in this project (teachers, specialists, academics etc).
- b) the conjectures that the cases (three for each parent) were based on. Here we should note that the conjectures for each case – and, of course, the cases themselves – were written by our research group based on the experiences and struggles of each particular parent. For example, Alejandra’s case titled “A matter of equity”, was written based on a conjecture that emerged from Alejandra’s personal life story, struggles and experiences with her child’s education:
 - “*Conjecture: Parental beliefs about the quality of education and the impact of parental involvement in school life is informed by the parents’ personal story of immigration, employment, social class, and existing social networks.*”

However, the access to this information will be controlled to a certain level: Our suggestion to the users is that they may choose to access the “other perspectives” after a) they have explored all the other information provided about that parent, and b) they have used their i-Journal to record their notes (i.e. questions, interpretations, conjectures, etc). In this way, we encourage the users to first type their ideas, thoughts, or reflections, before they read our views and analysis. We do not want the preservice teachers to abandon their own beliefs in favor of what the researchers – that might be viewed as “experts” – are suggesting.

In summary, we expect that the users will be comparing and contrasting these perspectives from different viewpoints and they will be encouraged to realize the significance of this information and understand its relevance for helping them think differently (Schwartz, Lin, Brophy, & Bransford, 1999).

4. Rich, multi-modal, non-linear information resources

Constructivism theory holds that learners construct knowledge through interaction with a variety of tools and information resources provided by the learning environment (Wilson, 1996). Moreover, designers should encourage the use of multiple modes of representation of information (Honebein, 1996) “including text documents, graphics and diagrams, sound, video, or any other medium of information that is appropriate for helping learners understand the content well enough to be able to use it to solve problems” (Jonassen, Peck, & Wilson, 1999, p. 199). Throughout the design and development of the current version of PARENTS we have tried to utilize most the above media. Both the “*Introduction*” and the “*Challenge*” screens that we described before are presented in dual formats: a user might choose to watch a narrated scrolling-text version or a plain text version of these pages (opening in a different window).

Most importantly, the core of this environment, that is the parents’ “*Cases*” (described below) consist of both text and video. We chose to have the parents themselves comment on the cases and discuss other related issues (we called those “*Story Points*”) using the video format, an immediate and powerful way to communicate the concerns, beliefs, and ideas of these three parents to the preservice teachers.

Additionally, we have organized information in a way that preservice teachers will have autonomy and control in selecting their own paths of exploration. This is allowed by the non-linear (or hypermedia) character of PARENTS: all the components are cross-linked and accessible by almost every screen of the interface. The menu located on the top part of the screen provides access to the main parts or components of PARENTS: the *Introduction*, the *Challenge*, the *Parents*, and the *Cases*, as well as the *i-Journal* and a link to a visual help guide. Components such as the *i-Journal*, the *Other Perspectives*, and the text versions of

the *Introduction*, *Challenge*, and *Task* are viewed in a different window so the user could switch from one window to the other according to their task (typing notes in their *i-Journal* while watching a parent's video commentary on a case).

To sum up, we aim to have PARENTS provide learner-selectable information just-in-time to support some meaningful activity by the learners (Jonassen, Peck, & Wilson, 1999).

5. Scaffolding and support

Dunlap & Grabinger (1996), among others, emphasize the importance of providing the appropriate scaffolding in every learning environment. They stress that “rather than ‘telling’ the student what to do, students must be ‘guided’ through the learning activities [...] encouraged to make their own decisions, and to pursue directions that they decide upon” (p. 78). Even though, all the aforementioned design principles can be characterized as ways of scaffolding and supporting a learner, in the current version of PARENTS we included specific tools such as symbol pads (i.e. the note-taking/organizing *i-Journal* component) (Perkins, 1991), a visual help guide, and contextual information relevant to the cases and issues that are embedded in the system (i.e. the “*More Info*” section).

Another important feature that accompanies every video presentation (i.e. video commentary from the PARENTS on the cases) in PARENTS is the video book-marking tool. While watching a video, the users can bookmark the clip at specific points that they consider as important or useful. The generated bookmarks are automatically sent and saved in the *i-Journal* from where they can be referred to for later use (i.e. as supporting “evidence” of the user's conjectures or suggestions).

Lastly, the consistency in the navigational organization of the interface will also serve a supporting function: in all the components of PARENTS, users are able to view visual cues that will help them understand the functionality of specific features or links. The interface offers visual cues in order to a) show the functionality of those links or buttons, and b) provide feedback for the actions of the users. For example, when the users moves the mouse cursor over a link or button the system will provide a pop-up, small window with a short description of how this button functions or to which screen the user will be directed.

6. Multimedia Case-Based Learning and Instruction in PARENTS

For the current version of PARENTS we have incorporated the stories from three parents who participated in the “Ecologies of Parental Engagement” project: Alejandra, Miranda, and Gloria (pseudonyms) (Figure 7). These parents expressed their hopes, motivations, obstacles, accomplishments, and support for parental involvement with the schools and the education, including the science education, of their children. These stories reveal how urban parents struggle to find ways to help their children connect to schooling, find a place for their ideas and voices to be heard, and gain access to the science that their children need to learn.

Based on each parent’s story, struggles, and experiences, our research group compiled three cases for each parent. Each case was written having in mind a conjecture that emerged from our research with that parent, in other words the challenge faced by that parent (see Appendix 4).

PARENTS sv2 Help | Logout

INTRO CHALLENGE PARENTS **CASES** JOURNAL

CASES

From this screen you will have access to a set of **nine cases** (three per parent). Each case is focused on one or two key challenges faced by that parent. Even though these cases were written based on the experiences and struggles of a particular parent, we chose to use different names for the actors in the cases themselves. Each parent comments on the cases derived from her own stories.

We suggest that you may start reading the text of the case and viewing the parent’s commentary for each part of that case (you will find video links in the text of each case that will start the video commentary for that part).

For each case you will be able to access:

- the text of the **Case** itself
- the **Video** commentary of the parent for each part of the case.

While viewing the video commentary you could:

- read the **transcript** of that video
- bookmark** the video at specific points that seem interesting or useful to your exploration (a time code will be created)
- send that bookmark (time code) to your i-Journal
- view the **Story Points** related to this case. In addition to the commentary for each case, we included the views of each parent on issues that relate to the presented cases. The Story Points aim to help you better understand the parents’ views on the issues embedded in this environment.

Gloria

- Unspoken News
- Saving the Night
- A Time for Science

Alejandra

- The Science Lab
- A Returning Principal
- A Matter of Equity

Miranda

- Wanted: Parent Involvement
- Let’s Talk About It!
- The Science Fair

Please remember that at any step of your exploration you may access any part of the PARENTS environment either from links of the screen that you will be viewing at that moment, or from the top main menu.

C O L U M B I A
C N M T L

Urban Science Education Center

Teachers College Columbia University

Figure 7: The Cases main screen.

At this point we should notice that even though these cases were written based on the experiences and struggles of a particular parent, we chose to use different names for the actors in the cases themselves. In that way we had each parent comment (on video) on the cases derived from her own stories: when the users start reading a case, at the end of each case part they can see the video commentary of that parent on the issues embedded in the case itself.

The user is also able to simultaneously read the corresponding transcript of the video in the attached text window (the transcript works as a scrolling caption below the video) (Figure 8). This is particularly helpful to the users since a) they could revisit this transcript later by scrolling to specific point, without viewing the video clip again, or b) in case they do not speak the parent's language – i.e. Alejandra speaks Spanish – they could always read the transcript which serves as the English translation of the video.

The screenshot shows a web browser window titled "PARENTSv2". The page header features the "PARENTS" logo and navigation links: "INTRO", "CHALLENGE", "PARENTS", "CASES", and "JOURNAL". The main content area is titled "Alejandra > The Science Lab". Below the title, there is a video player showing a black screen with a "Next >>" button and a "0:0:00" timestamp. To the right of the video player is a transcript titled "The Science Lab" with the following text:

Ever since her son Aldo started school Celia has committed to spend some time with him in the classroom. She visits his class at least twice per week in the morning, before driving to the west side of town where she works as a self-employed cleaning lady. Typically, Celia sits by her son's desk and they read a book together. At times, other children come and share the "reading moment." Celia also likes to help Aldo's teacher, Mr. Pinto, to prepare class materials. Throughout the school year Celia has developed a special affection for Mr. Pinto. Besides of seeing him as a teacher that is very invested in the children's learning, she admires the fact that he is very respectful and polite with all parents and goes out of his way to make them feel welcomed in the classroom

[Click: to see Alejandra's comments – Part 1]

Mr. Pinto on his part always praises Celia for how involved she is with Aldo's schooling and tells her that if only parents did half of what she does schools would be a paradise. Today, Wednesday, is Aldo's favorite day at school because the class goes to the science lab to do some experiments. Celia decided to make it a visit day in part to help her son to carry some materials that Mr. Pinto requested for today's lab.

- "Ayy, este muchacho," Celia tells Mr. Pinto as she and Aldo arrive in the classroom, "Can you believe he made me drive him last night at 9:30 to Wal-Mart just to buy him a detergent box? He thought we had some detergent at home, but I use the liquid kind and he says you asked for the powder kind. And then he wanted me to buy him the expensive one! He is something else. I am telling him one of these days he is going to blow my fuse"

- "I wish you had not gone Ms. Gongora," Mr. Pinto tells Celia, "We are not going to use the detergent after all."

Below the transcript, there are several sections: "Video Transcript" with a scrollable text area, "Video Bookmarks" with instructions to click here to send the time code to the journal, "See the conjecture(s) of this case", "Story Points" with a "See All" link, and a list of links: "Building a Relationship", "Alejandra's Hopes", "Alejandra's Voice", "Alejandra's Message", and "Why I Am Involved". The footer of the page includes the "COLUMBIA CNM TL" logo, "Urban Science Education Center", and "Teachers College Columbia University".

Figure 8: "The Science Lab" Case

Moreover, once in a particular Case screen users could access additional video commentary from that parent. We called these video clips “*Story Points*” since they are issues that relate either directly or implicitly to the issues presented or commented in the case. We consider these video *Story Points* as scaffolding resources for a deeper and more reflective understanding of the case and the parent’s views on relevant themes or issues.

Using and Evaluating PARENTS

The current version of PARENTS, as we described it above, was not only based on our design framework but also was the result of a) various pre-pilot tests we have performed with a small number of preservice science teachers, experienced teachers, and graduate students in science education, and b) the feedback we have received from the project’s advisory panel. From both of these two sources we had some preliminary comments or suggestions in regard to:

- The types of questions, interpretations, and conjectures that a user might pose or construct, about the issues embedded in PARENTS, and how could this be further encouraged or promoted by the system (i.e. make the “Challenge” situation more authentic).
- The type and amount of contextual or other information that a user might need, in addition to the resources already provided. We detected that the “Other Perspectives” section was an important component that the users needed to view.
- The navigational and functional features that were available to the user at that point of development. Additionally, we had some indications on how these features affect the time that the users need in order to familiarize themselves with the system (i.e. find out how the various menus, buttons, and screens work, or move from one screen to another, etc).

Following the theoretical framework of development research (Figure 1), the next step was to actually use this multimedia learning environment into the actual setting that it was aimed to: the first version of PARENTS was used by preservice science teachers who were

enrolled in the “Elementary Science Methods” course, which was offered by the Science Education program at Teachers College, during the Fall 2002 semester. We employed various data collection methods in order to address the research questions we mentioned earlier: survey, classroom observations, collection of written artifacts, and interviews with students.

The exploratory and descriptive character of the study implies the use of a mixture of methods: we intend to use both qualitative and (basic) quantitative methods of data collection and analysis. The data analysis process will be ongoing and always in accordance to our research questions. Analytic procedures that are currently being followed include: a) organizing the data, b) generating categories, themes, and patterns, c) coding the data, d) testing some initial understandings, e) search for possible alternative explanations, and f) synthesize the final report. We expect to detect emerging patterns and themes in the preservice teachers beliefs around parental engagement as well as in the user-interface interaction. Further discussion on the research analysis and findings is out of the scope of this paper.

Future Directions

The current prototype exhibits a set of limitations that will be taken under consideration into the next phase of its development.

A major component that we intended to develop was an online component of PARENTS, which we called “Forum” (see Appendix 5). One of our goals at the early stages of design was to have a product that would be delivered partly via a DVD-ROM and partly through the World Wide Web. This component was in accordance to the constructivist principle of collaboration and negotiation: knowledge construction is mediated through social dialogue (Duffy & Cunningham, 1996). Learning environments, such as the one we have designed, should enable students to contribute to each other’s learning through collaborative activities (Dunlap & Grabinger, 1996; Black & McClintock, 1996). Given that collaboration is an important element in the development and the negotiation of understanding, we want the future users of PARENTS to potentially go beyond their individual problem solving abilities

with the support of group members and successfully face “problematic” scenarios, that they would not have been able to accomplish on their own (Brown et al, 1989, cited in Dunlap & Grabinger, 1996). Our intention was to create a virtual learning community (Scardamalia et al, 1989, 1992, 1994; Scardamalia & Bereiter, 1993) where preservice teachers will have the chance to “go public” with their ideas: to make their thinking visible so others can assess and identify their understanding and others’, as well as to leave a “legacy” for future users that can further encourage reflection (Schwartz, Lin, Brophy, & Bransford, 1999).

Nevertheless, taking into consideration the available time for production, our priority was to first develop and pilot the DVD-ROM part of this environment. Therefore, the “collaboration and negotiation” principle was actually followed in the graduate course setting. The use of PARENTS did not happen in a vacuum. We integrated this multimedia environment into the course in way that would enable students to interact with each other, discuss their ideas and beliefs with their fellow classmates and collaboratively work in groups in order to present and negotiate their final ideas or suggestions with the whole class and the instructors.

Lastly, let us remind the reader that this study should be seen as a first step of a continuous process of design, development, and evaluation of the under-development prototype version of PARENTS. Based on the findings and results of the first implementation of PARENTS, several improvements or modifications will be made. These results will also inform the tentative design framework we have proposed and provide insights for a) future development of the system itself, and b) the way this multimedia case-based environment could be integrated and be used in the most effective way in the preservice teacher education setting.

APPENDICES

Appendix 1

Text Version of the “*Introduction*” and the “*Challenge*”

INTRODUCTION

In this multimedia environment you will have the opportunity to explore and reflect upon the stories of three parents: Alejandra, Miranda, and Gloria. Throughout this exploration you will have access to information regarding these parents’ lives, schools their children attended, science programs of those schools and of course challenges and issues they face in their engagement in their children’s schooling.

The core of this environment is a set of nine cases (three per parent). Each case is focused on one or two key challenges faced by that parent. Even though these cases were written based on the experiences and struggles of a particular parent, we chose to use different names for the actors in the cases themselves. Each parent comments on the cases derived from her own stories.

Your task is to read and reflect upon the cases, to gather information from the parents’ stories, comments, and experiences, and suggest how you, as a teacher, would respond to the issues that emerge from the cases and stories.

THE CHALLENGE

Presented here are the stories and voices of three parents sharing their experiences about science education, parental involvement and social justice.

Science holds a powerful place in our society. It opens doors to high-paying professions, and provides knowledge for more effective conversations with health care providers, educators, and business and community leaders. Science also informs decision making about the environment and new discoveries in science and technology. Yet a vast majority of urban students have developed negative attitudes towards science by the time they complete middle school.

Many factors contribute to students’ interest and success in science. One of these factors is the engagement of parents and schools working together to help children succeed in school science.

The Parents’ Stories

These stories reveal how urban parents struggle to find ways to help their children connect to schooling, find a place for their ideas and voices to be heard, and gain access to the science that their children need to learn. The stories presented in this project were told by parents who expressed their hopes, motivations, obstacles, accomplishments, and support for parental involvement with the schools and the education, including the science education, of their children.

While educators are often afforded the time and space to talk about parents, parents are rarely given the same opportunity.

P A R E N T S [“Parents, Researchers, and Educators Talking about Schools & Science”] is our attempt to fill this crucial void.

What do these parents tell us in their stories of challenges and triumphs? What are the obstacles that “involved” parents face as they develop and negotiate relationships with teachers and other school staff? What do they see as their accomplishments? What do parents value other than academics in teachers and administration? What do schools ask of parents, and conversely, what do parents ask of

schools? What values do parents place on the importance of science? What are the parents' view of their own experiences with science and their children's science? How do the schools support science education and/or parental involvement?"

These were our questions. Here are some of the questions that the parents whose stories are told here have raised:

Alejandra

But then I ask myself, why? What is happening with the district? Why do they let the schools fail? So that the students also fail? That's what I wonder about.

Gloria

It's important to know every subject in elementary. What is my child going to do when he or she gets up to that point and says, "We never talked about this in elementary?"

What's gonna happen then?

Miranda

This science stuff that's going on in school now, it's good for school, but are they gonna take that outside the school? Are they gonna use that with something, you know what I'm saying. I mean is there any job that has to do with the science that you're learning?

How would **you** respond to such questions?

Appendix 2

The user's Task

YOUR TASK

Your task is multifold; we encourage you to:

- Identify issues, problems, and ideas that are embedded in these cases (and maybe in other parts of this environment), by posing your own **questions** or dilemmas.
- **Interpret** those questions, using the various information resources provided in PARENTS
- Form your initial **conjectures** around the issues you identified and explored.
- Provide **evidence** and supporting information, gathered throughout your interaction with PARENTS, that will help you shape informed suggestions or solutions to your initial questions or to questions/issues mentioned by the parents.

Your ***i-Journal*** will help you record and organize your notes!

Let us also suggest that you could revisit the initial challenge and this multifold task during your exploration.

Appendix 3

Portrait of Miranda (here we provide the transcript of the video commentary from Miranda - in blue italics letters)

Miranda Lareau: “Portrait of Mama”

I am a mother of two and I work as a teaching assistant at my children’s elementary school. I used to work with handicapped kids in the Life Skills class. Now I work with the three-year olds in our pre-K classroom. My son Alonzo is nine years old, and my daughter Brandy is eleven. I’m one of those young parents; I graduated high school in ’93. My mom was never into visiting the schools. I remember from pre-K on up, I did all my own homework. My mom was never involved in anything that I did as far as school was concerned. I remember a Christmas play that I was supposed to be in when I was 7 years old and I didn’t get to make it because she didn’t want to go. She didn’t feel like getting up. So my mom missed out on a lot of my schooling when I was younger and she wasn’t on drugs, nothing like that. My mom was just working, got home, didn’t want to be bothered with anything after that. So I never participated in any school programs or the PTA, none of that. And I know how that made me feel when I was younger. I used to be a problem child because of the situation that I was going through at home...but as I got older, I learned how to talk more and I knew how to go to people for help and I got out of that situation.

Most days, I’m here from 7 in the morning till three and then I have all this other stuff to do in the classroom and in the school. I stay from 3 to 7 just about every day. There is almost always something going on at the school and I have to be here because in my childhood I didn’t have that dedication that I have for my kids now. And I don’t want them to feel like I felt when I was coming up. When we get home, I still gotta cook. I may have to clean up if I didn’t clean up the night before. I try to clean up at night so I don’t have to do it when I go home. My schedule is so...I don’t even have time for myself.

My first year, volunteering, I was in every room in this school. I worked in the library, I worked in the office, I worked in the cafeteria. I was all over this school. I know all my teachers. I know everyone that works in here because I’m dedicated. I wanted to see how these people were treating and teaching my kids. I wanted to know who my kids are saying good morning to and all that kind of stuff, you know. That’s just how interested I am. Because so much goes on, I want to be a part of that. I wanted to let these people know that this parent is very interested in her children’s education.

Miranda’s Portrait video part 1

Communication with the teacher

Q: How do you communicate with the school?

I talk to the teachers. I have always went to the teachers because I know I can’t get anywhere else. So if it’s concerning my child, I don’t go to the administrators. When they’re in trouble I go to the administrators. But when it’s academically trouble, I go to the teachers. The teachers I’ve never had a problem with. Subs, yeah. But my children’s teachers, that know me, that know I’m there whenever they need me, ‘Hey I need you over here, can you come over here real quick’. Those are who I go to. They listen to me, I listen to them. We collaborate, we work together. But the administrators, that’s a whole another subject.

Now I admit I was one of those lazy parents that didn’t want to get up and go to PTA and all that. But it does something to you to hear your child say “Mama can you come do this with me” or “Mama can you come see this” or “Mama, can you come see that”. But my kids were babies, they didn’t know nothing about no. Or so I thought they didn’t. That really bothered them that Mama

won't go to PTA, Mama won't go. And I admit it. But when I finally got up to the school, I felt so bad because I didn't even know my baby's teacher. Next thing I knew you couldn't keep me out of nobody's school that my children went to. Because I was always there.

I think science was my most favorite...science and biology were my most favorite subjects. Because I wasn't that bright in math. I was smart, I wasn't that bright. Science and biology those were my main subjects that I was really, really good in. It talked about the body. It talked about the adult man, the adult child, different things. The way the voice goes from baby to adult. It covered a whole lot of things. Even plants, on how they start out as a little seed and what you have to do to prosper it to grow and blossom, you know. Science talked about a whole lot of things. From water to body, you know. It talked about the color of the eyes and when the baby is being born, how the baby forms, how it creates. What color is it's eye gonna be, is this dominant, you know? Science covered a whole lot of issues.

Miranda's Portrait video part 2

Q: What did you do in science class?

We...all we did was take potatoes and put a pencil through it to see what it would do. It grew all kind of... what did it do...no it was...you know what? Now that...I'm 28 now, you're taking me way back to the fourth grade. I don't remember what we did with salt. I remember the paper clip, salt, string, jar, and water. And the purpose of that I don't know, I don't remember. But we also did an experiment with a potato. And I don't remember what the outcome of that...the only reason why I remember the waves, is cause that's what I was interested in, I liked that and the colors. We had one that was real colorful, real pretty, and the ocean, the little wavy thing that it would move. I was into that, we made robots. We did all kinds of weird things.

Q: Did you take any science in high school?

No, I didn't take any science, you know I sho' didn't. I didn't take any science in high school. None. I don't know. I couldn't tell you...let me stop lying. We had biology, that's science. Yeah, we had biology, we didn't do science experiments or nothing like that. We just had the class. The biology class...that was it and doing paperwork from the book and we had worksheets But as far as doing science fairs and putting stuff together. No, we never did that in high school. I didn't. I don't think I ever seen a science fair in high school now that I'm thinking about it.

Appendix 4

CASE Title: “**WANTED: PARENT INVOLVEMENT**”

Parent commenting: **Miranda** (here we provide the transcript of the video commentary from Miranda - in blue italics letters)

Michelle: Ya’ll come on and get your dinner. I want to leave as soon as Christine gets here.

Tiffany: What time are you getting back from the school, Mama?

Michelle: I don’t know, it depends on how long the workshop lasts. I’ll try to be back by 10 pm, but I expect ya’ll to be in bed by then. Don’t give Christine a hard time, you know your bedtime is 9 pm.

Tiffany: Yes maam.

(phone rings)

Michelle: Hello.

Beatrice: Hey girl, what ya’ll up to.

Michelle: Child, I’m trying to get these kids some dinner before Christine gets here. She’s gonna watch them for a couple of hours while I go up to the school for a parent workshop meeting.

Beatrice: Lord, girl, you always up at that school. You be there all day, don’t you get enough of them folks. What you going back there for?

Michelle: They’re having a parent workshop tonight about developing reading skills. You know Bobby has been having a little trouble with his reading, so I wanted to see if I could find something out that might help him.

Beatrice: Girl, those people always telling us we don’t do this, we don’t do that. What are the teachers there for? I’m tired of these people half teaching our kids and then want to turn around and put the blame on us talking about we don’t care about our children. I don’t need to hear that kind of mess, that’s why I don’t fool with those folks up there.

Michelle: Girl, you crazy. That’s not what they talk about at the meetings. They give you tips and ideas about how your kids can improve on their reading and math skills and stuff.

Miranda’s comments – Part 1

That sounds very familiar. The um...the parent that’s going to the workshop, cause I’m a parent that goes to workshops and...they do teach us...whatever the child’s not getting, they give us certain sources to try to see if he catches on that away. And I’ve also been on the other foot too, on the other end of the phone, you know, thinking that they do sometimes blame us for not...for our child not knowing this and that because a teacher is only supposed to teach a child from point A to point Z, well I’ll say [point] G and we take it from there. That’s what I think. If the parent and the teacher work together to help the

child learn whatever he needs or she needs to learn then, you know what I'm saying...then we can collaborate together on what we need to do.

Beatrice: That's what they tell you to get you up there and then they start laying all the guilt trip on you about what you ain't doing right and it's your fault that your kids are behind. How come they don't ever have a meeting on how teachers can improve their teaching? Maybe then we might see some real learning going on.

Miranda's comments – Part 2

At first I used to believe that 'yeah, the teachers really not doing what they need to do'. But that's not true, that really is not true as far as...because like I have two kids in the school. And the teachers can only do so much. We as parents have to do the other end. It's not all on the teacher to teach them how to read, to teach them how to write. That should start at home.

Michelle: Teachers do get training on inservice days and during the summer. But we parents have to do our part too. Why don't you come with me tonight and see what's going on. Didn't you say Roshonda was having trouble too?

Beatrice: Yeah, her teacher told me she might not pass the TAAS if her reading doesn't improve. But see that's what I'm talking about. Every time you turn around all you hear is TAAS, TAAS, TAAS. It seems like all they're doing now is teaching these kids to take this damn test. I was listening to the news the other day and they talking about some kids are graduating from high school and still don't know how to read or do simple math. But I bet you those kids passed TAAS, but they can barely read or write. They making it so that teachers don't even have to teach anymore, all they have do is hand out worksheets for kids to practice TAAS. I don't even think they want our kids to be educated, otherwise they might actually be something.

Miranda's comments – Part 3

That's basically true on both ends (Q:What's basically true?) Um, how the... well how the teach...the uh kids, some are exempt from the TAAS test. They pass anyway whether they take it or not.

Melissa: Girl, I'm telling you it's not like that. If you get in that school, you can make those people do right for your kids. It's when they don't see you, then they think they can get away with stuff like that. But if you get in there and start working with those teachers, they will try to work with you. Now the administrators, that's another story. I don't even fool with them. I just deal with my teachers so they know what I expect for my kids. I know what you mean about the TAAS test because Tiffany gets all worked up about it...but we are working on that. I just keep encouraging her not to think about it being a test, just to do it because she knows the work.

Beatrice: I know Tiffany is real smart, she should be able to knock that test right on out. Maybe if they quit focusing on it so much, then she wouldn't be so nervous about it. I mean they keep throwing it in your face that your kids are in a low-performing school, how are they ever going to have that confidence they need? I tell my kids to do just do the best they can but I know those teachers are not teaching them the stuff they need to make it through high school. All they bring home are those worksheets for TAAS practice and when I ask what they did in class they can't even hardly tell me. Maybe I do need to get up to that school and find out what's really going on. But girl, I only have one day off during the week and I be so tired. At least you work up at the school so you

can keep an eye on what's going on. That's why I don't even bother because I know I'll find out anything I need to know from you.

Michelle: But girl, we need more parents up there. They know that they can do whatever they want because there's not a lot of parents that come up to the school. Even though I work there they still don't listen to what I have to say. It's like I'm not even a parent, just an employee. You know this workshop I'm going to tonight, it probably won't be but three parents up there and two of us don't count because we work there. If we got more parents up there, we might be able to do something. I'm not saying that everything they do is right but I know I have to do for my own. Every once and in a while I have to get up in there and raise some hell because sometimes if you talk too nice to them, they think that means they can just run all over you. And then you have to know who you can talk to and who you can't because not everybody there is your friend. They don't make it easy but if you figure out who can help and who can't then you can work with them. I know it's not easy Beatrice but I have to make that sacrifice for my kids and let them know even if the school don't care about you, Mama cares about you. That's all I can do.

Miranda's comments – Part 4

If I was in the situation on the other end of the phone, I would be there. I mean getting information about what's going in the school from somebody that's there all the time is fine. But it's even better when you're there yourself, you know what I'm saying. So you can ask your own questions, have your own opinions, and take it from there. That way you'll know what you can do to help the school.

No matter who works at the school, once that person of that child is there all the time, you'll see a whole lot of changes. Changes that wasn't in the picture before you started coming. So dedication to me is being up there as much as possible.

Well the teacher notices that this child... "That parent is here all the time...whose parent is that"? And once they find out who that child is then they're like "Oh, okay, so maybe we can do this and do this and...you know what I'm saying. You get a lot of results when you're there all the time...I did. I got a lot of results when I was always up there. But if you're not up there, who's cares? They don't care.

And I'm still there even though I don't get counted for being there because I'm a parent? Well, I'm a staff. I still don't get counted or even recognized for being there. And the person that does recognize us is the person that's holding the workshop or whatever. The only person that recognizes us, you know. And I feel like...like I said again I feel like I'm a slave, you know. That's all I can say about that. (Parents are slaves at the school?) Not particularly parents, but assistant teachers that are parents in the school? Yeah!

Q: How could Beatrice find out what is going on at school if she is not able to physically go?

Newsletters being sent home and they send grade level newsletters home every month to let you know what's coming up. What they've done, what they're getting ready to do for the new upcoming weeks, a lot of events that's coming up. A lot of...when they send ...although they may not get them. But they can send newsletters home, if she's just that busy, you know, and can't make it up there, the newsletter will tell her what's going on.

Q: How could Beatrice get in contact with the teacher to discuss her concerns if she cannot go to the school?

Phone meetings...they have phone meetings. If you can't make it to the school on that day or...we'll set it up for a phone meeting. They'll give you a certain date and time because I've had to have some of those too. (Why?) Why the phone meeting? Oh like teacher-parent conference day. You can't make it that day because you're babysitting. Or something came up and you can't leave the house. You're waiting on someone or something. They'll schedule a phone appointment, you know. Or the parent can send someone in the family. Send the father, send the aunt, a uncle, a brother, a sister, a cousin, that's of age. I've done that too. I've sent my next-door neighbor up to the school when they had certain meetings with my kids. If I couldn't make it.

Q: What might the teacher's reaction be to a neighbor to a neighbor or family member?

Well, teachers expect anyone, anyone they can get in that door, anybody, anybody. Anybody that knows that child that's in their class. Whether it be whoever I just mentioned, a family member, a friend, a neighbor. They do expect somebody. It doesn't matter who, as long they know that child.

Beatrice: Well you go girl. I'll do my parenting stuff right here at home because I'm liable to get in there and hurt somebody if they start talking that nonsense to me. When they can tell me what those teachers are doing that's making our kids not learn then I'm ready to talk. I know I've got some smart kids, even Roshonda who the teacher is talking about is a slow reader, that girl can memorize all these songs the first time she hears them, go on the internet and find out all this information about all her favorite movie stars and singers, but then they gonna try to tell me she's a slow reader. Now does that make sense to you?

Michelle: I know what you mean. I don't let them tell me what my kids can't do. Tell me what they can do and we'll go from there. But I still wish you would come with me. I'm the only parent from our neighborhood that goes. Why don't you come and if you don't like it, I won't ever ask you again.

Beatrice: I'll see but I'm not making any promises.

Michelle: Well alright then. I'll talk to you later. Bye girl.

Beatrice: Bye.

Appendix 5

FORUM

As we mentioned before, our goal was to create an online part of this PARENTS. Even though this might be available at a future stage of development we provide a brief (tentative) description of its components:

“Post your Work”

The users post the ideas, questions, or responses to the issues raised by the system or to additional questions that we might ask them. They should be able to:

- Retrieve information from their i-Journal (such as text, video bookmarks etc) and paste them on this page. This might be done directly from the i-Journal by submitting an html-based form.
- Post additional information (type text, hyperlinks, uploading files etc) that might support their argument.

Threaded Discussions (text)

- The discussions could be initiated either from the users or us (the coordinators of the forum). This will be a virtual place for negotiating each other ideas and suggestions.

Chat

- Online Chat sessions could be organized by us (the coordinators of the forum). This feature will be extremely helpful when we want users that are located in different geographical places to discuss about issues raised in the Post or Discussions sections in a synchronous mode.

Message Center

- From this page a user could send email messages to other users of the forum.

Resources Center

Additional scaffolding information provided either by us (the coordinators) or the users of the forum, such as:

- Hyperlinks to related websites
- Documents (doc, pdf files etc)
- Images and Figures

Multiple Perspectives

This part could be seen as the online version of the “Other Perspectives” screen that is provided on the DVD-ROM. From this page a user could:

- Read reflections, ideas, or comments by researchers or “experts” in the field (text)
- Post questions that will later be answered by the “experts”

Forum Help

- This feature will provide help on using the components of the online forum and it will be available at every page of the Forum.

Search the Forum

- All the components of the online forum will be searchable (available at every page of the Forum).

Both the DVD-ROM and the Forum (online) part of PARENTS will be cross-linked. That is, access to the online forum should be available at any screen of the DVD-ROM and vice versa.

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