

Teachers as Co-researchers: How the Co-researcher Role has  
Transformed Teachers and Nature Education for Young Children  
at an Early Education Program in the Midwest

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*“A very important piece of being a co-researcher is that it is a deeply reflective process. As we’re working with children we’re observing. We’ve chosen to write something down about children. We have to determine what’s taking place, why it’s important, how it’s valuable to their growth and development, plus we have to be able to communicate that concisely to a broader culture that may not recognize and respect that. I don’t know how you could be an early education teacher and NOT be a co-researcher. To understand children’s growth and development, you need to go through that reflective process.”*

*– Jen, Teacher/Co-researcher*

## **Context**

### **Purpose**

This single case study explores the role of early childhood educators who serve as co-researchers in an early education program that has a strong nature/environmental emphasis. For the purpose of this paper, the co-researcher role is defined as teachers collaborating with other teachers, researchers and consultants, and being integrally involved in collecting data, analyzing data, incorporating results into their practice, and disseminating findings through presentations, workshops and writing.

### **Background**

Our research at Dimensions began almost 10 years ago, in February 1998. The goal was to explore how children developed visual-spatial skills, and how teachers could best support that development. Initially teachers were trained by an Arts-are-Basic teaching architect to use an architectural technique called “visual notes” to document their observations of children in the block areas of the preschool classrooms (e.g., depicting a variety of perspectives, including plan view, elevation, rendering; identifying sequences in building, providing an exploded view to see more details).

Teachers were given journals and asked to record their observations of children’s work (including the building process, individual work and social interactions). An interdisciplinary team (including an early childhood director, architect, and qualitative research specialist) analyzed teachers’ early entries, identified key themes, and formulated a series of working hypotheses to summarize the findings. A few teachers joined the analysis team and we instituted a feedback loop to share the results with all teachers (e.g., through weekly staff meetings, in-service training and special team meetings).

Once teachers became familiar with using visual notes to document children’s work, we provided them with an overview of qualitative research methodology as a framework to help them understand their roles as co-researchers. Over the years we have provided additional teacher training. In 2001 we partnered with a local college and the research director offered an optional three-credit masters level qualitative research course. Eleven teachers completed that first course. We provided on-going teacher

training in weekly staff meetings, and the opportunity to discuss key findings from the research and reflect on how those findings might shape practice. In 2005, the research director developed a short orientation to qualitative research and the teacher-as-co-researcher role for all new teachers (delivered annually during August training). In the fall of 2007 the research director offered the qualitative research course again, open to Dimensions consultants as well as teachers. Three teachers and three consultants enrolled in the course. To date, fifteen teachers have completed a formal course in qualitative research methods.

Over the years, the focus of our research expanded significantly. An article published in the *Applied Environmental Education and Communication* journal (Miller, 2007) describes the evolution of our work:

Although the initial focus of our research was on building, teachers' documentation identified the importance of movement in children's block work, especially children's "need" to move their bodies to develop motor skills, learn to negotiate through space, and internalize their learning (illustrated by many children who built 100% scale structures large enough to sit or climb on or built structures with movable components). Simultaneously, our architect consultant began encouraging children to build outdoors using natural materials to help them better understand the connection between the built and natural environments. We began to see the connection of visual-spatial skills to nature (e.g., observing closely; seeing details, patterns, shapes, colors, textures; seeing things from multiple perspectives; learning about pathways and movement through space; understanding scale relationships; experiencing area and volume; estimating distance). This became the impetus for exploring the learning that takes place when children are connecting with the natural world.

In 2002 (four years into our research) the early education programs formed Dimensions Educational Research Foundation. With the name change, First-Plymouth Early Education classrooms were designated as Dimensions' research classrooms. Today Dimensions' mission is to help children, families, and educators connect more deeply with the world around them and our research focuses on nature, building, and movement. One of Dimensions' nine core values states that teachers' work is guided by a "research-based framework" (Dimensions' website).

The data teachers collect and analyze are used to continually improve classroom practice. Many teachers have described their role as co-researchers as an ongoing "process" that has unfolded over the years. Our work began as a small-scale, semester-long grant funded "project" that examined children's visual-spatial skill development. As our research evolved we recognized that it is a form of action research. Mills (2000) describes action research as a "journey of investigation" (p. 3). We have discovered that, as Mills suggests, "there is no way of knowing in advance where we will end up" (p.3). Teacher/Co-researcher Holly Murdoch, who reacted to an early draft of this paper, stressed that it is that ambiguity that "validates and makes (teachers') work authentic. We are not identifying outcomes beforehand. We are using the research process to discover

what is truly effective”. She added that “not everything is quantifiable...we do not set out to prove a pre-determined hypothesis. With children, we set up what we believe is the best possible external environment but it’s the unknown...the true journey...the continual process of discovery that is essential to real learning...(our work) is about what honors the individual child”. Certainly, as Mills suggests, the research process “is an on-going, creative activity that exposes us to surprises along the way” (p. 3). Indeed many of our discoveries have been surprises. None of us could have fully comprehended in 1998 where we would be ten years later. Along the way, we have brought greater definition to the teacher/co-researcher role.

### **The Teacher/Co-researcher Role**

Teachers are considered “participant-observers” because along with their co-researcher roles, they participate simultaneously as fully functioning members of this teaching and learning community (Glesne, 1999). Besides their primary role as teachers, they are also the “human instruments” – they closely **observe** children, informally **interview** them, and **document** children’s activities. Holly noted that this “should be the role of any good teacher” but that the “essence of being a co-researcher in our program is the way this informs our work with children. It is a big responsibility, using what is happening in the culture of our community to improve teaching”.

Teachers have been integrally involved in **designing** our research protocols. For example, they helped develop “Nature Notes” documentation forms for recording their observations of preschool children (Appendix A) and infants/toddlers (Appendix B) interacting with/in nature. Teachers collect visual materials such as children’s artwork, and photograph and videotape children interacting in our Nature Explore Classroom™, in the neighborhood, and on nature field trips.

Due to scheduling logistics, a smaller number of teachers are involved in regular **analysis**, which includes two analysis teams that meet weekly (i.e., one team analyzes preschool Nature Notes and the other team analyzes infant/toddler Nature Notes). Teachers helped develop a structured analysis protocol, based on key themes that emerged early in our analysis (Appendix C). In the 2006-2007 academic year, every teacher was included in a two-hour analysis session. In 2007-2008 we have incorporated analysis into weekly staff meetings (one full meeting each semester), so that all teachers continue to have the opportunity to be involved in and learn from the analysis process.

In the last two years teachers have become more integrally involved in **disseminating** our findings through conference presentations, workshops and writing. For example, Dimensions developed a series of Nature Explore workshops to offer to organizations that are interested in our work (Appendix D). In 2005 Dimensions offered its first “Train-the-Trainer” workshop series, to train teachers to present workshops locally, regionally and nationally. Initially 12 teachers became certified trainers. Two Train-the-Trainer workshops have been offered in 2007 and four additional teachers became certified. To date, twelve of nineteen preschool teachers (63%) and three of seven infant/toddler teachers (43%) have completed the five-workshop certification

process. Teachers have presented Dimensions' workshops locally and in California, New York, and Minnesota. Some have presented at regional and national conferences. In addition, teachers have written articles for Exchange Magazine and for our parent newsletter, which is posted on Dimensions' website. Teachers' involvement in the dissemination phase is just beginning to take shape.

## **Research Procedures**

### **Action Research**

Based on Mills' (2000) definition, our teachers/co-researchers' work at Dimensions could be identified as "practical action research" (p.9). Mills suggests that most action research uses narrative, descriptive methods, which fits the qualitative research paradigm. He defines action research as "systematic inquiry conducted by teacher researchers...or other stakeholders in the teaching/learning environment, to gather information about the ways that their particular schools operate, how they teach, and how their students learn. This information is gathered with the goals of gaining insight, developing reflective practice, effecting positive changes in the school environment (and on educational practices in general), and improving student outcomes and the lives of those involved." (p. 6).

Practical action research is conducted in four steps, including: 1) identifying an area of focus, 2) collecting data, 3) analyzing and interpreting the results, and 4) developing an action plan. Teachers at Dimensions are regularly involved in this cycle. Holly said "it is the teachers who must take everything they are learning through the research and reflection cycle and apply that to their teaching". Part of action research at Dimensions is teacher/co-researchers making the connection between theory and practice.

In addition to the methodological steps in the research cycle, Mills identified five key components of practical action research. These components are important, fundamental assumptions of the work teachers are doing in Dimensions' Research Classrooms:

- 1) Teacher-researchers have decision-making authority;
- 2) Teacher-researchers are committed to continual professional development and school improvement;
- 3) Teacher-researchers want to reflect on their practice;
- 4) Teacher-researchers will use a systematic approach for reflecting on their practice; and
- 5) Teacher-researchers will choose an area of focus, determine data collection techniques, analyze and interpret data, and develop action plans.

Holly noted that even though teachers have an integral role as co-researchers, some "may not be fully aware of the possibilities of this role and how much power they have to ask questions, make decisions, pursue opportunities, (and) incorporate learning from our research into their everyday practice".

## **Holistic and Embedded Case Study Designs**

This paper describes both the ongoing research Dimensions has conducted for the past ten years (i.e., the holistic case study), AND the specific research that explores teachers' perceptions of the teacher/co-researcher role (i.e., the embedded case study). Both are discussed because understanding the larger context of our research is central to understanding teachers' involvement as co-researchers.

We define our research at Dimensions as a single-site, qualitative case study. Creswell (1998) describes case study research as "the exploration of a 'bounded system' or a case, over time through detailed, in-depth data collection involving multiple sources of information rich in context" (p. 61). The goal is to understand the case, and the context of the case is critical to understanding it. Stake (1995) suggested that we choose to study a case because the case is of interest; it has "a unique life". The case is a "unique entity", and "there is a special something to be studied" (p. 133). The case may be an individual, an event, or an innovative program. The characteristics of case study research fit with our intent to explore Dimensions' unique programs and innovative contributions to nature education for children and educational practice.

While our overall research is holistic in nature, the data collected and analyzed for this paper represents an "embedded case study" design (Yin, 1990, p. 49). Yin describes an embedded case study as the study of a specific sub-unit within the larger case. The holistic case study encompasses all of our research at Dimensions. The embedded case study specifically examines the teacher-as-co-researcher role (i.e., the sub-unit).

### **The Embedded Case Study/Teachers-as-Co-researchers**

The data for this embedded case study include individual interviews with five teachers and eight focus group interviews, conducted between fall 2004 and spring 2007. Six to nine teachers were present at each of the focus group interviews. The focus group interviews were conducted during weekly staff meetings to ensure that all teachers could participate. The focus group interviews lasted between one and a half to two hours.

The goal of the interviews was to explore teachers' perceptions of the co-researcher role. The interviews were guided by the use of semi-structured interview protocols with open-ended questions. Additional questions were asked as relevant issues emerged, along with probes for clarification and elaboration. Dimensions' research director conducted all of the focus group interviews and one individual interview. An undergraduate student who used the project as her senior seminar research requirement conducted four individual interviews. She worked closely with Dimensions' research director in framing the research questions and interview questions. The interviews were audio recorded and transcribed verbatim, then systematically analyzed to identify four key themes that emerged in the data.

## Introduction to the Site

The site is an early education program in Lincoln, NE that employs nineteen preschool teachers, seven infant/toddler teachers, and twelve staff (average preschool teacher tenure = 10+ years). As one teacher noted during a focus group interview, Dimensions has “a longevity that probably rivals anyplace”. Sixteen of twenty-one teachers currently on the preschool staff (76%) have been with Dimensions since we began our research in 1998. According to the National Association for the Education of Young Children (NAEYC), turnover for preschool teachers averages 30-50% annually (January 2005, Smart Money). Dimensions’ teachers have indicated that they believe their involvement as co-researchers, i.e., being involved in “important” work, has positively impacted teacher retention.

Until recent years the program was known in the community as “First-Plymouth Early Education Programs”. Currently it serves 186 infants, toddlers and preschoolers from a variety of socio-economic backgrounds. The early education programs are housed in a 76 year old, architecturally beautiful, brick building, known as First-Plymouth church. However, the early education program is not church-based. It is situated in an historic neighborhood with beautiful, older houses, mature trees, and small parks nearby.

Dimensions’ research classrooms consist of two large preschool classrooms, two toddler classrooms, one infant classroom, three “small group” rooms, and two gym areas. In 2004-2005 Dimensions constructed a \$375,000 model outdoor classroom for pre-school aged children and last year added a separate outdoor classroom for infants and toddlers. Recently Dimensions partnered with the Arbor Day Foundation to offer Nature Explore™ workshops and collaborate with sites across the country (e.g., schools, nature centers, arboretums) interested in constructing certified Nature Explore (outdoor) Classrooms. The research that teachers conduct directly informs the Nature Explore workshops and indoor and outdoor curriculum plans.

Dimensions’ Nature Explore classroom is 78’ x 82’ and is divided into designated areas (see figure 1). Children traverse the limestone paths through a large perennial garden with native grasses and a vegetable garden. A local community foundation funded a 12’ x 20’ greenhouse, to ensure that children could interact with nature in meaningful ways year-round. Children may visit the Greenhouse when a group is not using it, and children have two small group activities a month scheduled in the Greenhouse. There is a large, L-shaped sand area and a dirt-digging area where children dig, dump and fill, and create scenic wonders such as the Grand Canyon. Children can experience nature from multiple levels on a large climbing/crawling structure, and there is a large open-area to give children plenty of room for gross motor movement. In the “messy materials” area, children dig in mulch, explore different sizes of tree cookies, logs and branches, and climb on low brick walls created by a local sculptor. They experiment with instruments in the music area, and tap into the inspiration of nature as they create masterpieces in the art area.

## Key Findings

Four key themes emerged in the data (Table 1). The key themes describe:

- how the teacher/co-researcher role has influenced teachers' personal growth;
- how the teacher/co-researcher role has influenced teachers' professional growth;
- how the teacher/co-researcher role has given teachers "new eyes" and transformed how they view and teach children; and
- how the teacher/co-researcher role has created unique outcomes in this early education program.

## Personal Development

The first theme that emerged in the data indicated that teachers have changed personally from their work as co-researchers. Dimensions' teachers are passionate, dedicated, committed individuals who want to be challenged and want to continue to grow as individuals as well as professionals. Teachers appreciate working at a place that cares about them as people as well as professionals. For example, Suzan values that Dimensions is truly "an environment where everyone is valued and appreciated. We can grow and develop". Ann, Dimensions' Art Specialist, loves that her work "has satisfied my every need for intellectual curiosity...it satisfies (my) need to be able to think about things when I go home, (and) I want to do that." She added that now, more than ever, "I have a sense of purpose."

The co-researcher role has helped teachers discover more about who they are and what is important to them. Holly shared that through the co-researcher role, her "authentic passion and talents are put to use and supported." She said, "the co-researcher role has helped me be independent, feel strongly about what I believe – (my) ideas, observations, theories. I know they work, but (the power is in) when they are shared and validated by co-teachers. All of our work is guided by our research (and) it has helped me define who I am. Doing work like this helps me be myself."

Besides the obvious professional growth, Tina described how the work that has evolved from the co-researcher role has helped her "personally with self-esteem issues, acknowledging that I am an intelligent human being." Several teachers described how their work as co-researchers increased their "self-confidence" and their willingness to take risks and try new things.

Similarly, Holly explained how the teacher/co-researcher role has changed teachers' views of themselves: "...75% of an image problem is not outside, it's how you view yourself. By doing this work, we can't even relate to (the concept of) daycare anymore. We're starting to hear that more from each other. And that's what we will be radiating. It is more visible, more apparent in this setting."

Many teachers reflected on how the teacher/co-researcher role, and their understanding of it, has evolved over several years. They described it as a "process" of growth. Kris described it as a "spiritual journey...everyone is on the journey, just at a

different place.” Kris added how much teachers see things differently today from when they first began the journey. “ (We are) looking at the world in a different way because (we) know so much more about what we are all doing here”. For many teachers, this work is about their personal “mission” and it is something they believe in and live.

### **Professional Development**

The second theme that emerged in the data was that the teacher/co-researcher role has significantly contributed to teachers’ professional development. It has helped teachers feel more “empowered” and has provided many opportunities for meaningful interactions and professional involvement. Early childhood teachers have not always felt respected and have not always believed they are viewed as professionals, so professionalism was an important theme for Dimensions’ teachers. Their work as co-researchers has given them a sense of “validation” and “credibility”.

Ann described how “instrumental” the executive director has been in helping teachers “get used to feeling professional” (e.g., “through “staff meetings, reading and discussing articles, professional dress...”). Jen added that professionalism has become “an important aspect of who we are and how we approach things.”

Validation has come with that professionalism. Tina explained that one outcome of the co-researcher role is that “it validates the commitment we have to children, beyond what society deems a daycare profession. It adds validity and a level of respect that the early childhood field does not yet have. Kris agreed that one of the most important things about being a co-researcher is that “it validates my work in educating young children” and that it is especially meaningful because it can “show the world” the importance of early childhood education.

Many teachers have been “inspired” and “motivated” because they recognize they are doing “important work” that “makes a difference.” The co-researcher role has elevated teachers’ work to a higher level as it has gained recognition with a broader audience. As Holly noted, this is “bigger than our small microcosm of society”. She explained: “the difference (at Dimensions) is that we have an audience. We have license to experiment, expand on things we don’t see being done, we’re putting it together in our unique way (and) we have an audience. We’ve been listened to, funded, published...that support provides a recognition that moves it all forward”. And, Tina added, “It feeds us ...feeling that someone else values what (we) are doing”.

Teachers also described how important collaboration has been to the co-researcher role and how much collaboration it takes to be co-researchers. That collaboration may come in the form of another teacher observing what a teacher is doing with her group and stepping in and taking photographs when something significant is happening. Or another teacher offering to work with a group of children, to free up the teacher to document what her children are doing.

Joyce indicated that “being co-researchers means being a team” and that “seeing the value of what (we) do and the connections for everybody” makes teachers’ work important. Working together as co-researchers takes a lot of collaboration. As Joyce explained, collaboration occurs “teacher-to-teacher, teacher-to-children, teacher - (to consultants)”. It is affirming for teachers because, “collaboration assures that you don’t have to do things by yourself...(I know that) someone else is going to take care of me and make me look good. It’s so important to know we are part of a team.” Holly agreed: It has created a support system with our co-researchers and those relationships are big. It has given us a strong commonality that is of very high value.”

The co-researcher collaboration has provided powerful opportunities for teachers to learn from each other and to value others’ unique contributions. Julie explained: “we’ve gained a great deal of respect for each others’ strengths”. She added: “it helps when we think of each other as co-researchers – how powerful it is to learn from each other! We hypothesize and synthesize...and I get to learn from all of (our teachers) as we share our knowledge”.

Even the quality of reflection and dialogue has increased significantly as a result of the teacher/co-researcher collaboration. In a focus group interview Holly asked her colleagues, “When did we ever have discussions like this? Just the thinking, communicating, relating – the relationships we’ve built. We value the discussions, the stimulating thought. We have learned so much from each other.” Tina added that, “by working together and considering ourselves co-researchers, we’ve learned to...do deep thinking, ask questions, have disagreements, ask more questions, and go back and do it again. We’ve learned to do this as a team.” Ann noted how much trust has developed in teachers’ relationships over the years to enable the deep discussion: “we can’t do that without disagreeing, and we can’t disagree without knowing each other. We can do that because we trust each other.”

Many teachers described the importance of having opportunities for professional development, and that those opportunities have “energized”, “challenged” and “stretched” them. Those opportunities have made Ann realize that “job satisfaction is so important”. She admitted that years ago she “had a lack of confidence”. Now she’s “grown to a place where I can say, ‘I’d like to make up a workshop about art’ and (the executive director says) ‘Go for it’. And I do, and I give it (in Minnesota for the first time). Similarly, Julie, who recently became Dimensions’ workshop coordinator, said, “I can go to (the executive director) and say, ‘I really have a need for this’ and she’ll figure out a way to make that happen. I look at all the hats I am wearing, and I do have a lot of outside interests and I love it. I can say, ‘I love this’ and I haven’t said that for a long time.” Suzan (now one of Dimensions’ certified trainers) added, “I wouldn’t have seen myself doing workshops. Do I have it all down? No, I have a lot to learn. But I’m not afraid of doing it. There’s a great opportunity for us all to grow and share our strengths”.

Joyce, who is on the preschool analysis team marveled: “talk about possibilities and inclusiveness...by putting your whole self – mind and body into this – it brings new possibilities” for involvement and growth. She added, “there is always someone sensitive

to getting everyone involved. IF you want to be involved, ASK, and there's someone who will make that happen for you". Ann added that teachers have been "given opportunities for growth all the time". Tina agreed that "the opportunities for professional development have been tremendous... We need to say what we want and need, then come up with solutions to make that happen." Teachers know they have this freedom because the co-researcher role has created a culture where teachers have license to propose ideas and be involved in ways they could not previously have imagined. Succinctly, Cami described the opportunities as "SO empowering for us as teachers." Holly noted that with all the ways teacher/co-researchers have been empowered, "we are pushing the envelope". Jen suggested that the message communicated to Dimensions' teacher/co-researchers has been: "your strengths are valued... we will seek out a role for you that supports your growth and capitalizes on your strengths". She wondered aloud, "I'm not sure how many places have that genuine commitment...(that) support base."

Teachers have received a great deal of support over the years as the co-researcher role has evolved. Even now, 10 years into the research, teachers feel their work is still very much "in process". That is part of the challenge. Kathy explained, "We never get there! We're always in process. That's what makes it so energizing. (Dimensions) is not the place to be if you want things to be static, it never will be!" Ann, Dimensions' Art Specialist, used an analogy to illustrate the "process". "Art is a process. Artists don't know what art is going to be until they are physically doing it. Walt Whitman said 'I don't know what I'm saying until I write it'. That's like research. We are constantly re-assessing... how can we make it better? Everything is a process. We are finding better ways to support children, teachers and parents."

Teachers indicated that the training they received in staff meetings and in the prototype workshops helped shape their co-researcher role. Tina said, "we've gotten a huge amount of training along the way to get to this point, so we can teach ourselves to ask the questions." However, not everything along the way has been comfortable for teachers. In fact, multiple teachers noted that some of the training and co-researcher responsibilities were out of their comfort zones. For example, Kris recalled having to dance at an architecture workshop, and relate (the dance) to buildings..."and I'm not a dancer!" But she recalled the architect's ability "to get you to a place where you'd think, 'I can't do it'" and then the architect would "scaffold" teachers learning, taking them to the next level. Kathy expressed how "thankful" she is that the staff got to go through all the workshops together. "All the things I am learning are wonderful, I use those things I learned, (and) it bound us all together". She added, "sometimes we thought, 'oh my word, that was so uncomfortable."

Early on many teachers were not comfortable with the Visual Notes documentation process. Joyce said she would look at another teacher's notes and think, "I'll never be able to do this". Holly, a skillful observer who now provides insightful documentation, was initially very uncomfortable with the visual notes process. Teachers had to get over their fear of drawing and realize that they simply needed to communicate the significant information about children in an understandable way. Their sketches didn't have to be elaborate or artistic.

Joyce explained that for her, the training provided “a continual reminder” of what teachers/co-researchers needed to be doing and provided “the reason why (it was) important.” She added that the training also gave teachers a “vocabulary” so they could use “the same language.”

Several teachers suggested that being involved in the analysis process was an important opportunity for professional development and it helped them understand more about the co-researcher role. Closely examining the data helped teachers understand what documentation was most valuable and how important the documentation is to the research process. Perhaps most importantly, the analysis process helped them realize how much teachers can learn about children from the close observation and documentation. Teachers began to realize that their documentation is the basis for analysis and all of Dimensions’ research. Kris said that participating in analysis helped her realize not only the importance, but also why she needs to be doing it. Sitting in on analysis was affirming for Cindy, because she realized that even if she doesn’t write a lot, the analysis team is able to glean “a lot of information from it – it’s still important.”

The formal qualitative research course that several teachers completed also helped teachers “come together and learn a common language”. Tina explained that the course “helped us learn to ask questions and gave us a way to glean the answers...there is something about being immersed...it was incredibly interesting.” Jen described the course as “intellectually challenging” and believed it “deepened (teachers’) understanding of research and being a co-researcher.” Tina said, “rarely in our lives do we go that deep.”

The co-researcher role has empowered teachers, helped them feel a part of something important, and has provided them with opportunities for professional development. It has also significantly impacted teacher retention. Consider the statistic stated earlier in this paper, that early childhood programs typically experience a 30% to 50% turnover rate annually...and that 76% of the preschool teachers who were at Dimensions when we began the research 10 years ago are still here.

Kathy, who has taught at Dimensions for over 20 years, shared with her co-researchers that the research has “rejuvenated” her. Ten years ago, she had gone to the executive director and said she thought she “was ready for a professional change.” She added, “Then at the same time, we started this (research) and I thought, ‘oh, here’s something new to stretch your mind’. Kathy has been stretched and challenged in the last 10 years and realizes that “the power is that (this work) is everlasting...that we’ve all experienced it together...(and that) we can’t be the same teachers we were.” Kris also believes that becoming a co-researcher inspired her to continue teaching. “I probably wouldn’t have lasted without becoming a co-researcher. I was at the place where it was easy to think, ‘I’ve done that 15 times, I don’t want to do it again’. It has allowed me to want to stay!” In a nutshell, Kristi exclaimed, “Look at the turnover rate here. Look at what this has done for our program and keeping teachers here!!”

### **New Eyes/Seeing and Teaching Children Differently**

The third theme that emerged in the data was that the teacher/co-researcher role has transformed how teachers view and teach children. Julie explained that observing and documenting children's activities "shows teachers what children know." One of Kathy's favorite sayings is that the co-researcher role has given her "new eyes". She elaborated: "It's changed how I look at things...I look at things in a deeper way. When I see children doing things I ask, 'what are they telling me, what does this mean?'"

Teachers perceive that they are much more aware of children's capabilities and what they are learning. Suzan believes that the "freedom and opportunities" teachers provide to children "because of all the (research) we are doing" has significantly impacted her role as a teacher. Previously she taught in a private school. "Teaching was different because I had to get certain things accomplished each day. I was not nearly as in tune with the children as I am today. (Now) my teaching and the way I observe children is completely different."

Cindy also views "children's activities in a different light. Before, I thought they were just playing. Now I value what they are doing more. I see (my own daughter who attends Dimensions' program) differently than I would have years ago. I value things she does that I would have passed by and (now) can encourage them." Denise added that, "seeing what children can do makes me want to do the research and doing the research helps me see more of what children can do." Julie explained that when teachers are paying close attention to children, it "validates them as little human beings" and communicates to children "that their work is important".

Holly shared that "one of the big things (teachers) are learning (as co-researchers) is the scope of what...children can do if they have an audience, support and information...this is limitless. We are giving children the inspiration and space to learn for themselves." When Holly recently read Jane Goodall's biography, it struck her that Jane was raised by strong women. As a result, it never occurred to Jane that "she couldn't do something because they did it all." Holly reminded teachers, "that's something for us to remember...that true belief in taking away the limits" for children. Tina called this "complete empowerment." Suzan noticed that perhaps this empowerment is occurring: "What we don't hear children saying anymore is 'I can't do this'. They are figuring out ways to do things and asking for help less and less."

Tina believes that "being involved in the research process" has made her "a much better teacher." She has learned that "the PROCESS of learning is important, it's not just the product. I can see the process, and develop skills to record it. I'm able to make the process evident. It helps me understand and know children better and validate each child for his or her uniqueness." Tina believes that one of the most meaningful aspects of the co-researcher role is that teachers "get to know what children know". For example, paying close attention and documenting children's visual-spatial work, their movement, and their interactions with nature "gives children a language to express what they know."

Tina added that “often they don’t have the words to communicate that yet” but they show it through their work and play, and teachers can capture that in their Visual Notes and Nature Notes.

Another important lesson Tina has learned has been “to slow down”. She explained that when she is with a group of children, “my purpose is not necessarily to get my walk done and get back to the building. As a parent to three young children that is the way my world is right now, we’re rushing around a lot. It takes five minutes to stop and notice the ants crawling up the tree or look at the squirrel and wonder where it came from. Children stop and do this out of natural curiosity and parents and teachers need to be aware enough to stop and look closely with (children) when they have made that discovery.” Holly added, “you let children take time to stop and look and see the beauty of the shapes, the colors, the arrangements...you let them experience the beauty.”

Tina stressed that stopping to observe is “much more meaningful” because it comes from the children. “We have to allow those moments to happen.” Tina noted that the “transformation” in her teaching has been “intentional” on her part. As an educator of young children she knows she “wants to help children make that connection to their surroundings...to be more detailed observers, to find the delight in what they are picking up outside. So, it’s taking those moments, when my initial reaction is to say, ‘no, we’re not picking up sticks, no we’re not going to pick up bricks – it’s dangerous – it’s messy’...that I just step back and stop myself and think, ‘well, ok we can do that’. My job is to figure out how we can do that in a safe way.”

As co-researchers, teachers learned that their teaching had to evolve in the Nature Explore Classroom, even when that was not necessarily comfortable. In many ways, this change has been about honoring children and their ideas. For example, Donalyn related a story about working with a group of mostly boys who were very interested in bugs. “They decided to catch little bugs in little bug catchers”. Before long, the children began to collect dead bugs. “I remember thinking that day, ‘what am I going to do with dead bugs?’ Well, we got back and we examined them and the next thing I knew, they were saying, ‘let’s draw the bugs’. It was their idea and if I would have squelched that idea and said, ‘no, we can’t pick up a dead bug’ I would have lost a lot...it really became one of the bigger projects (my children have done) and I wouldn’t have come up with it on my own”.

Donalyn reflected on what she has learned about children and dirt! A dirt digging area was not in the original plans for the Nature Explore Classrooms but teachers quickly discovered children’s inclination to dig. They had access to a large sand area, but children “really wanted to get in the dirt”...“now we have an area to dig in and (children) love it.” Donalyn laughed as she described her own transformation, “now I think that dirt and water will be fun”. Jody stressed how important it is for children to have opportunities to get messy and fully experience the outdoors: “you’d be amazed at how many children have not played in the mud.” She added that those special times, playing in the water, being barefoot, getting wet, “are the things that (children) will remember...the ‘ah ha’ moments.”

Teachers have worked hard to extend children's learning into the outdoors, and they noted many specific learning outcomes for children. For example, children are overcoming their fear of insects, because they get to closely observe the "real thing" rather than something in a picture book. They get to hold them and notice their attributes. Children have often sketched them, painted them, or made clay dough models of the insects. Most importantly, they have cared for them.

By spending time outdoors, children get to observe and celebrate the seasons, and experience the seasonal changes. This is "connecting children to the year's calendar." Children get to plant trees, name trees, care for trees. They get to "feed birds, and study about what happens to them in the winter...and provide yarn clippings for birds to use as nesting...(this is) a way to connect with the seasons."

Through their interactive experiences with nature, children are learning to respect and care for the environment. Some teachers were skeptical about this at first. For example, Donalyn said that "letting children touch and feel (the plants) and walk and run through the areas" of the Nature Explore Classroom has been "amazing" to her. She admitted that "the first time, in my mind, I was thinking, 'we'll see how long this lasts'. Yet, by having a path and by talking with children about different plants and not saying 'you can't do this', they've done it on their own – they've taken real ownership of those plants. I hear children say, 'don't step on that'."

Holly suggested that teachers "are developing nurturers through activities as simple as caring about worms and insects, or having children learn about prairie grass. If that doesn't change a culture, what will? We can use music and movement, be looking at science and teach that to children by connecting to the prairie. We are helping anchor children in local history, (and) helping them understand the local environment and ecosystem."

Tina added that teachers have found a way to facilitate learning for children who have a "natural inclination" to be outdoors, dig in the dirt and get messy. "We've found a way to make that happen for them, and we can scaffold (their learning) to the next level. On the other hand we recognize those children who need encouragement to take those little steps to be comfortable out in the environment, and we've found ways to help them. (Without the research) I'm not sure we would have gotten to that level of understanding of...the different learning styles of children in the outdoors...our observation skills have grown exponentially through all of this. By doing (the close observation and documentation) it helps us have a much greater appreciation of children."

As teachers have closely observed children they have discovered how important it is for children to physically interact with natural materials. Suzan suggested that "one of the most valuable things we've done" occurred during the year the Nature Explore Classroom was being constructed. Intent on giving children interesting outdoor experiences, "teachers brought in a variety of natural materials for children to explore (branches, cross sections of trees, mulch, great big logs)." Suzan added, "you know, the

long, 6' branches...I was concerned about the safety issue, but those children have learned to handle those in a safe way with correct supervision. They've built wonderful shelters, Little House on the Prairie cabins, served Thanksgiving dinner on a giant log. We've learned so much from just watching them!"

Tina added that what teachers have done is "take what's there and make it accessible to children". For example, Tina described how Holly had brought in large branches with leaves still on them. So, the experience for children is "not just looking at the tree that's 30 feet high...(Holly has) found a way to get those leaves and branches into children's hands...(and) to get a trunk of a tree laying down so they can explore it in every way possible. It's not just going and standing and looking at what's there, it is finding a way to make it usable and accessible for children."

One teacher explained that the "real benefit" is "just having all those nature items to discover." The outdoor classroom...the garden, the greenhouse, the variety of natural materials provides so many learning opportunities for children. Another teacher described how meaningful it was to see "children's excitement about a carrot they helped plant and later picked...or making buckwheat pancakes out of the buckwheat they grew in the garden...or being amazed to find real sunflower seeds on the sunflowers in the garden". Teachers described this as authentic learning. One teacher added, "rather than so much focus on the teacher's plan or agenda, it is very authentic when children find something of interest to them, because they can definitely feel very passionate about it, even if it is a squirrel."

Teachers believe that all the high quality questioning and exploration provides "opportunities for critical thinking." The children are "developing a whole new vocabulary (e.g., migrate, pollinate, nectar, names of plants, animals, insects) through the experiential learning and dialogue that takes place." Children's learning outdoors is "giving them time to think, apply and question." Teachers believe it also "gives children opportunities to connect with their past experiences, share what they know, (and) apply knowledge in different ways...it is extending their thinking." As one teacher explained, teachers are realizing that children "are capable of so much creativity and thought." As co-researchers, teachers are paying such close attention and have realized they need "to be open to what (children) are showing us, telling us and bringing to us."

Teachers are realizing just how much they can learn from children. Sometimes this means that teachers' plans may change completely when a child's inquiry leads the class somewhere different. According to Holly, "it takes high level teaching to say, 'this child is informing me'; to recognize that teachers are not omniscient. What we have honestly learned as co-researchers is that our children are going to have outcomes connected to the learning experiences we are providing for them, but (those outcomes) may not be what we expect because the learning process only works if children can make it their own".

Holly described how the questions teachers are asking children have changed. Holly made an analogy to her own experience participating in focus group interviews.

The open-ended questions sometimes drive her “crazy” because they are so “abstract”, yet they push her to think differently and more deeply. She’s realized that teachers should be using those same kinds of questions with children, precisely because they are more abstract, and will help children think more deeply. Open-ended questions are much more powerful to use with children because “the answers are uniquely theirs and because there is no right or wrong.” Teachers have begun asking children questions like, “What do you see? What do you like? What do you know? What do you wonder?” Holly says the reason those questions are “so beautiful” is that they “allow children to show us what is important to them, how they think, and what they know...those questions truly allow us to access children’s ways of thinking and if we don’t do that, the learning stops.” Holly added: “when children share their answers and teachers affirm their responses, children are going to gain confidence and realize that they can participate in the learning process.”

### **Unique Outcomes**

The fourth theme that emerged in the data identifies the unique outcomes created at this particular early education program site. Some of the outcomes were not necessarily anticipated, but directly or indirectly resulted from teachers’ involvement in the research process and the co-researcher role. The outcomes impact teachers, parents and children.

Teachers at Dimensions seemed to have a much larger vision of their work. For Ann, being a co-researcher means knowing she is “a part of something really important that could change the course of education.” She feels “lucky to be able to do that” and it fuels her sense of purpose. She added: “Teachers are in it for the children, not the money. They are very committed, planning lessons every day, doing meaningful things for children.” The co-researcher responsibilities add “an extra layer on top of that, that has made it extra special. It makes it fun to come to work.”

Many of the teachers described the importance of the “common language” and “common culture” that has been created among the teachers who work at Dimensions, which is directly related to teachers’ shared mission as co-researchers. It is a result of the hard questions, reflection, dialogue, challenges, evolving vision, learning, and success that has occurred over the past 10 years. Creating that common language and new culture has not always been easy, and has required learning how to communicate differently, especially as Dimensions’ work has grown.

Teachers recognize that the work they are doing as co-researchers is cutting edge and innovative. Kathy believes that what sets Dimensions apart is the kind of “data collection (and) documentation” teachers are doing as co-researchers. “Teachers at other places are doing a lot of good things. But this makes us totally unique...and it makes (our work) so valid.” Joyce and Cindy both said that it is the “close observation” that is necessary to take Visual and Nature Notes that takes teachers’ work “a step further”. They believe that what they are doing is important for children and will be a meaningful contribution to the early childhood field. The knowledge teachers are gaining in their roles as co-researchers daily informs practice. For example, Holly said, “it is the ongoing

process of research, recording what children are doing, analyzing what we are seeing, that is creating a process for helping us design the use of our time with children.”

Teachers also believe that the tools they are using for documentation provide a mechanism for valid assessment. Julie described the co-researcher process as “truly a model for learning”. “We have become careful observers. It has given us incredible tools to use, for example, in analysis we continually pose questions...as practitioners it opens up the possibilities of (the ways) we understand how children are constructing their knowledge...how we view children. This is assessment – what it should be. It’s seamless. Our daily observations help us see children for who they are – it is authentic assessment.” Holly added that as early childhood teachers “it’s even more important to have dialogue and do analysis, because if we want to know about little children, are we going to give them a test? No! This is important for early childhood...how else can (teachers) know and understand children besides (through) direct observation and recording the documentation?” Tina concurred that, “There is a richness and authenticity about children’s learning that I’m aware of now from honing my observation skills and thinking about children’s learning.”

Several teachers have also personally reconnected with nature through Dimensions’ training and spending time with children outdoors. Julie, who has conducted several Nature Explore workshops for Dimensions, noted that on the evaluations workshop participants often talk about (the power of) connecting with nature themselves during the workshops. She said, “it sounds like a simple concept, but it is not”. In today’s society, people have “every reason for not going outside” but when they do, they realize “how good it felt” and say, “I’m going to do that with my children”. And Julie believes that is the point. “WE experience, and then we pass it on to our children. It’s our mission”.

Holly eloquently summarized her view of the co-researcher role: “Thinking in the co-researcher framework, (teachers) have to be introspective, expressive, creative, dynamic, authentic, intelligent, fresh and evolving. Our work requires us to be these things. And we can feel good about what we are doing (because it is) high quality, of high social value and it supports sustainability. We are constantly growing and in touch with ourselves.”

Holly noted that another outcome of teachers’ work as co-researchers is that parents are consistently providing teachers with feedback that their children “are learning so much.” She added, “The parents are excited and the teachers are excited”. Teachers’ close observation and careful documentation provides an additional layer of information to parents about their children. Kris said: “Look at (the documentation) we are sending home to parents, versus...(giving them) a number with four words, ‘she smiles in school’. The “data we are collecting” provide “benchmarks”. Parents “can see what their children can do.”

Not only has Kathy’s role as a co-researcher given her new eyes, but she said “it gives parents new eyes, too.” For example, when teachers send home detailed

documentation about what children are doing and learning, parents “see that there’s a whole wide range of skills and abilities and other languages besides written and verbal.” Julie stressed how important it is to provide parents with that information “so they have that understanding” of what their children know, can do, and are learning. Kristi (who also has a child in the program) stressed that the documentation teachers send home is “so important...so meaningful to parents because it shows how much we know their children” because we have observed them so closely. Cami added that teachers’ close observation enables them to notice and “let parents know the things we’ve never seen (their children) do before”.

Kris described how the documentation she has sent home with one of her children who has strong visual-spatial skills has helped his mom realize “he may need something to encourage him in kindergarten. She wants to use his portfolio to get a visual mentor for him.” Kris added that “the research has encouraged parents to look at the next stage” as their children move into their formal education in a traditional classroom setting where they don’t have an outdoor classroom, don’t spend much time interacting with nature, and don’t have much opportunity to build with blocks and other three-dimensional materials.

Two related outcomes of the co-researcher role include: 1) teachers’ increased involvement creating innovative programs to help others connect more deeply with nature, and 2) parents/families increased involvement in nature activities. One example of this is the creation of a unique program designed to involve families in meaningful outdoor experiences. Over the last year, Dimensions, in collaboration with the Arbor Day Foundation, has developed the Nature Explore Family Club (Appendix E). Chris, one of Dimensions’ teacher/co-researchers is the coordinator of this new program – an opportunity she would not have anticipated having a few years ago. She described how the “club” has grown since its debut nine months ago: “We began with five families, 12 people, at a park on a cold January day. In April we had 55 preschoolers on a fishing trip (to a local lake). This fall we have 106 families signed up for the family club”. Dimensions’ on-site club is a pilot for a program that will be offered to broader audiences. Chris said that one of the goals is to “inspire families to spend quality time outdoors” and it has been another way to involve parents in nature activities with their children.

Finally, teachers’ work as co-researchers has had an unexpected impact on children. Both Joyce and Ann described how “children have become co-researchers too”. Teachers have trained themselves to look closely, AND as one teacher noted, “we’ve trained our children to look very carefully.” For example, Ann noted that our children “observe closely and sketch.” They are developing keen observation skills. They are learning to document and record, and their drawing, writing, and use of symbols provides a link to literacy. Teachers have modeled close observation and sketching, and that has become a part of the culture for children as well as teachers. Cami commented that people who are not familiar with Dimensions’ program “are amazed that children 3 and 4 are sketching”. Suzan added, “children are becoming much more observant. You can see that from their sketches when they are in the greenhouse. They sketch all the details.”

Even young children are posing research questions and framing and testing hypotheses (which relates to early science learning). They are observing and recording their observations. Sometimes these activities are teacher-initiated, but many times they are child-initiated. Joyce believes this “validates” and “empowers” children, which positively impacts “their self esteem and learning.”

### Conclusion

The co-researcher role has provided a powerful context for learning for teachers at Dimensions. It has stretched them personally and professionally, most likely beyond what many of them would have imagined 10 years ago. There have been tangible and intangible rewards for teachers. The co-researcher role has increased their belief in themselves, in their work, and in what children can do. It has validated what they do, and their work (close observation and documentation) has validated what children do.

Dimensions’ mission is to help children, families and educators connect more deeply with the world around them, and the co-researcher role has provided many opportunities for teachers to connect more deeply with nature. In turn, teachers have provided opportunities for children and their parents/families to connect with nature in meaningful ways. Teachers have been empowered, and in turn have empowered children.

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Table 1: Overview of Key Themes

Theme #1: Ways The Co-researcher Role has Influenced Teachers' <b>Personal Growth</b>
<ul style="list-style-type: none"> <li>• Increased teachers' self-esteem/self image</li> <li>• Acknowledged teachers are "intelligent human beings"</li> <li>• Increased self-confidence and risk taking</li> <li>• Satisfied teachers' need for intellectual curiosity</li> <li>• Increased teachers' sense of purpose/mission</li> <li>• Increased teachers' independence, belief in and ability to be themselves</li> <li>• Tapped into teachers' authentic passions and talents</li> <li>• Reconnected teachers' to nature ("a spiritual journey")</li> </ul>
Theme #2: Ways the Co-researcher Role has Influenced Teachers' <b>Professional Growth</b>
<ul style="list-style-type: none"> <li>• Validated teachers' work with young children</li> <li>• Provided greater respect for work in the early childhood field</li> <li>• Increased professionalism</li> <li>• Increased meaningful collaboration and dialogue</li> <li>• Increased opportunities for involvement</li> <li>• Provided challenge and support through extensive, ongoing training</li> <li>• Increased job satisfaction</li> <li>• Positively impacted teacher retention rates</li> </ul>
Theme #3: Ways the Co-researcher Role has Inspired Teachers to See /Teach Children "With New Eyes"
<ul style="list-style-type: none"> <li>• Informed teachers much more deeply about what their children can do</li> <li>• Shaped the way teachers use their time with children</li> <li>• Inspired teachers to ask children questions differently</li> <li>• Perpetuated a mission to help children connect more deeply with nature</li> <li>• Encouraged teachers to honor children and their ideas</li> <li>• Encouraged teachers to "slow down", let children tap into their natural curiosity and notice/enjoy the beauty of nature</li> <li>• Encouraged teachers to anchor children in local history, the local environment and the ecosystem</li> <li>• Allowed teachers to let those "ah-ha" moments occur for children</li> <li>• Helped teachers realize the importance of having children be outdoors/physically interact with natural materials</li> <li>• Helped teachers recognize that significant learning is taking place (i.e., children are not just "playing")</li> <li>• Allowed teachers to scaffold children's learning to the next level</li> </ul>

Theme #4: Unique Outcomes of the Co-researcher Role
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| <ul style="list-style-type: none"><li>• Teachers are “part of something that could change the course of education”</li><li>• The research “sets us apart” (Cycle of questioning, observing, documenting, analyzing, reflecting, dialoging, applying to practice, evaluating...)</li><li>• Teachers are doing work of “high value, high quality, social significance”</li><li>• The research has created a common culture/common language/shared mission</li><li>• The dialogue and reflection have energized, inspired, and informed teachers in new ways</li><li>• Teachers’ careful observation and documentation tools provide authentic assessment of children’s knowledge/thinking/learning</li><li>• Teachers provide parents with much more meaningful, professional, credible documentation about their children’s learning</li><li>• Teachers have been intellectually challenged to think deeply and have a greater understanding of research</li><li>• Parents have become more aware/involved in nature activities</li><li>• “Children have become co-researchers, too!”</li></ul> |
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