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Technology, toddlers and vocabulary development

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Technology, toddlers and vocabulary development

Abstract
Emergent literacy with toddler age children has a strong foundation in vocabulary development. There are many methods currently being employed to foster vocabulary development. Dialogic reading, sign language, finger plays and songs are just a few of those methods. It is important to look for a curriculum that provides a format to combine these strategies into a cohesive presentation. Understanding the increasing importance that technology plays in the lives of our children is also crucial. Selecting the right technology may provide the solution for infusing vocabulary development into the early learning environment. This project will design a curriculum to implement technology in order to foster the development of emergent literacy by building vocabulary with very young children. Using digital images from the child's world both at home and at school will make vocabulary development authentic, meaningful and individualized. Involving parents in the project will strengthen connections between home and school, initiate life-long technology use with their children, and empower parents to become active participants in their child's learning.
Technology, Toddlers and Vocabulary Development

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Division of Literacy Education
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Master of Arts in Education
UNIVERSITY OF NORTHERN IOWA

By
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Abstract

Emergent literacy with toddler age children has a strong foundation in vocabulary development. There are many methods currently being employed to foster vocabulary development. Dialogic reading, sign language, finger plays and songs are just a few of those methods. It is important to look for a curriculum that provides a format to combine these strategies into a cohesive presentation. Understanding the increasing importance that technology plays in the lives of our children is also crucial. Selecting the right technology may provide the solution for infusing vocabulary development into the early learning environment. This project will design a curriculum to implement technology in order to foster the development of emergent literacy by building vocabulary with very young children. Using digital images from the child’s world both at home and at school will make vocabulary development authentic, meaningful and individualized. Involving parents in the project will strengthen connections between home and school, initiate life-long technology use with their children, and empower parents to become active participants in their child’s learning.

Key Terminology: emergent literacy, curriculum, developmentally appropriate practice, technology, dialogic reading strategies, toddler age
Table Of Contents

Introduction ........................................................................................................... 1

Rationale ............................................................................................................... 1

A Parent’s Perspective......................................................................................... 2

An Inclusive Program’s Perspectives................................................................. 2

An Emergent Literacy Teacher’s Perspective.................................................... 2

Purpose ............................................................................................................... 3

Guiding Questions ............................................................................................ 3

Key Terminology ............................................................................................... 4

Methodology ..................................................................................................... 5

Established Standards ....................................................................................... 5

Evidence of Assessment .................................................................................... 7

Development of the Learning Plan ................................................................... 9

Getting Started ................................................................................................ 9

Image Collection ............................................................................................... 9

Sharing Technology with Toddlers ................................................................. 9

Review of Literature ......................................................................................... 11

The Role of Professional Development ............................................................ 12

ExCell .............................................................................................................. 13

Developmentally Appropriate Practice ............................................................ 13

Vocabulary Instruction Embedded in Read-Alouds: Traditional Strategies ....... 14

Dialogic Reading ............................................................................................... 15

Text Talk ........................................................................................................... 16
Appendix F: Goal Setting and Vocabulary Word Selection Guide--------45
  List 1 Words --------------------------------------------------------45
  List 2 Words/Phrases -----------------------------------------------46
Appendix G: Daily Sheet to Share Experiences with Parents------------47
Appendix H: Questions to Guide Reflections for Exit Interview--------48
Introduction

All of education is feeling the push to incorporate technology in ways that make learning relevant for the students who come through school doors. When those doors lead into early childhood classrooms educators need to be confident in presenting technology that is truly rooted in best practice and used to achieve vocabulary learning objectives that are grounded in a strong research based curriculum. The task, then, is to examine our vocabulary development objectives, the methods that are used to achieve those goals and look at technology that might be implemented to assist in early word learning. This paper examines the use of technological aids in the development of a toddler’s vocabulary, both at home and in the early childhood center.

Teachers need to be masters of the technology, selecting and using applications that get to the very heart of vocabulary learning concepts and objectives. Technology that is not embedded into the curriculum does not serve the purposes of the classroom (McManis & Gunnewig, 2008). Early childhood programs have the wonderful opportunity to involve families in the incorporation of developmentally appropriate electronic media for dynamic results. Such cooperation with parents creates a new layer of learning as very young children see both of their primary environments come together to support their learning needs (Gillespie, 2006).

Rationale

Multiple perspectives will be included in this project. Parents are children’s first teachers and take this responsibility very seriously (Hensley, 2005). The perspective of the early learning center needs to acknowledge this and still support teachers in those
centers. It can be a delicate balance and is successful when both teachers and parents take
the role of advocate for children's vocabulary development.

**A parent's perspective.** Vocabulary development has an exciting effect on
toddlers and their families. Once children start to verbally label objects and people in
their world, they begin to interact in a life-long practice of communication. Parents and
grandparents wait impatiently for those first words and worry when other children in the
playgroup start talking first. Giving parents a tool that empowers them to participate in
this early vocabulary development will alleviate some of this anxiety (Hensley, 2005).
Using technology to do this will help parents start a “technology dialog” and signify that
they intend to be involved in this ever-increasing aspect of their children’s future.

**An inclusive program’s perspective.** Successful early childhood centers
understand and utilize the power of involving all stakeholders in building healthy
programming (Wise, Sanson, & Southbank, 2003). A sense of community and support is
established when parents understand the important role that they play in their children’s
learning and they feel supported even in the time that they must be away from their
children (Hensley, 2005). A special atmosphere is attained when everyone; parents, staff,
teachers and administrators can work together on a project like vocabulary development
to strengthen connections between home and school. It is the intention of this project to
use technology to allow this communication to happen seamlessly and the lines between
these two important environments to become blurred.

**An emergent literacy teacher’s perspective.** When developing emergent
literacy with infants and toddlers, the emphasis revolves around building vocabulary for
future reading and writing success (Fillmore & Snow, 2000). Vocabulary development is
one of the foundations for literacy learning. Children with large vocabularies have an
easier time decoding and making meaning from text (Fillmore & Snow, 2000).

Incorporating technology into the curriculum will allow for many well-researched
vocabulary-learning strategies to be melded into one format that engages children in
relevant, authentic learning.

Purpose

The purpose of this project is to develop a curriculum that will utilize technology
to accomplish three goals.

1. To help parents feel empowered in the learning lives of their children and
   comfortable with the role that technology will play in their children’s future.
2. To allow children to explore and manipulate technology in the context of a
   nurturing and engaging experience with trusted adults.
3. To build vocabulary foundations in the language development of toddlers so they
   can communicate their wants, needs, feelings and ideas verbally in the present,
   with the expectation of creating life-long literacy learners later.

Guiding Questions

1. What effective strategies are currently being employed to build vocabulary with
toddlers in credible early childhood settings?
2. How might technology be appropriately incorporated into those strategies to
   create authentic, meaningful programming that can meet individual children’s
   vocabulary goals?
Key Terminology

1. **Emergent literacy** is used to explain a time in a children’s development when they are practicing the skills that will help them become readers and writers. Skills like listening, speaking, singing, rhyming, book handling, print awareness, letter and phonological awareness, scribbling, and completing simple puzzles are all examples of emergent literacy skills.

2. **Curriculum** describes a plan for learning. It starts with setting clear objectives for learning, defines assessment tools and plans strategies for delivering information.

3. **Developmentally appropriate practice** ensures that teaching practices are appropriate to the age, developmental level and cultural context of the specific children being taught so they can reach goals that are challenging and achievable.

4. **Technology in this project** refers to the use of electronic media to accomplish specific learning objectives.

5. **Dialogic reading strategy** is an evidence-based approach to shared storybook reading in which the goal is for the child to become the storyteller. The adult prompts the child to say something about the book, evaluates the child’s response, expands the child’s response by rephrasing and repeats the prompt to ensure the child has learned from the expansion.

6. **Toddler age** describes a young child beginning at the age of 24 months.
Methodology

I developed the project using a curriculum framework, *Understanding by Design* (UbD) by Wiggins and McTighe (1998). This three stage “backward design” approach starts by establishing goals or standards, proceeds to establishing the forms of performance based evidence that will be used for assessment and finally, in stage three, develops the learning plan. This methodology emphasizes reaching targeted goals that are embedded in the curriculum in order to maximize the transfer of new learning.

For this project, the goal-setting stage will search out existing local, state and national literacy learning standards and identify those that fall under the scope of this project, specifically vocabulary development. The evidence section will define the qualitative assessments that will be used to measure children’s progress for learning targeted words and methods used to achieve them. The learning plan will summarize the key events that will be used to foster vocabulary development and define how technology will be employed.

Established Standards

Stage one of the UbD process begins by asking what the *big ideas* are for a particular unit of study. These goals are comprised of learning standards and target key knowledge/skills that are being sought. Standards are the specific understandings that children will gain from the unit. Teachers cannot plan what the children will do (activities), until they define what children should know (understandings) upon completion of the project. UbD proposes that unless learners can take what they have learned and apply it to new situations on their own (transfer), it may not actually have been learned at all. Teachers need to identify the specific goals/skills that children are to
acquire which will enable students to transfer learning independently. UbD also seeks to
develop essential questions to guide students as they explore these big ideas and
considers any common misunderstandings that may arise. It is this thoughtful
groundwork that ensures that the planned units of learning will have the desired
outcomes. Throughout this process, teachers keep their eyes on the targeted content
standards and make revisions as necessary.

Currently several leading organizations seek to define standards for vocabulary
development. The National Association for the Education of Young Children (NAEYC)
and its state affiliate, The Iowa Association for the Education of Young Children
(IAEYC) along with many other stakeholders, have developed the Iowa Early Learning
Standards (IAEYC, 2012) that seek to define what emergent literacy is, why it is
important, what it looks like in practice and how adults can support it. Each learning
domain of IELS is also linked with the Iowa Core Curriculum so teachers can understand
how the two sets of benchmarks support each other. This is helpful as early childhood
teachers have knowledge of the expectations for learning that elementary programs
anticipate. A smooth transition from infancy through high school is accomplished when
all stakeholders understand the full scope of literacy learning.

The Head Start Agency endorses another packaged curriculum to provide
standards for vocabulary learning. It is Creative Curriculum Gold (Teaching Strategies
LLC, 2013). Head Start agencies provide support to families that have been identified as
"at risk" because they meet certain socio-economic criteria. Each of these agencies has
utilized very similar ideologies in setting their standards. Table 1 identifies and compares
vocabulary-learning standards for toddlers as identified by NAEYC, IELS and CCG.
Table 1

Standards for Vocabulary Development with Toddlers

<table>
<thead>
<tr>
<th>NAEYC</th>
<th>IELS</th>
<th>CCG</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.D.02 Children are provided opportunities to experience oral and written communication in a language their family uses or understands.</td>
<td>Infants and toddlers understand and use communication and language for a variety of purposes. <strong>Benchmarks:</strong> Responds to the vocalizations and communications, verbal and nonverbal, of familiar adults. Uses vocalizations and gestures to gain attention from others. Uses vocalizations and gestures to communicate wants and needs. Increases both listening (receptive) and speaking (expressive) vocabulary. Progresses to using words then simple sentences to communicate. Participates in conversations, using both receptive (listening) and expressive (speaking) language skills. Answers simple questions Follows simple directions.</td>
<td><strong>Objective 8:</strong> Listens to and understands increasingly complex language. Comprehends language. Follows directions.</td>
</tr>
<tr>
<td>2.D.04 Children have varied opportunities to develop vocabulary through <strong>a.</strong> Conversations <strong>b.</strong> Experiences, <strong>c.</strong> Field trips, and <strong>d.</strong> Books.</td>
<td></td>
<td><strong>Objective 9:</strong> Uses language to express thoughts and needs. Uses an expanding expressive vocabulary. Speaks clearly. Uses conventional grammar. Tells about another time and place.</td>
</tr>
</tbody>
</table>

**Objective 10:** Uses appropriate conversational and other communication skills. Engages in conversation. Uses social rules of language.

Note. Information retrieved from NAEYC Torch Website: http://www.naeyc.org/academy/primary/torch

**Evidence for Assessment**

The next step taken in the design process was to decide how to assess vocabulary growth that might occur as a result of the children’s participation in this program. The assessment plan was developed by considering the evidence that could be collected during the project both at home and at school. The key procedural step was that before children would engage with the technology, parents and teachers would identify targeted
vocabulary (See Appendix F, Goal Setting and Vocabulary Word Selection Guide). This list will be used to document children's use of words during the activity and communicate to all classroom staff what targeted words should be listened for during the day. Teachers will also use a daily communication sheet (Appendix G) that parents take home at the end of each day detailing information about their children's time at school. This sheet has a specific place to share vocabulary growth news. The second list will be employed as children learn the targeted words of the first list and are ready to move on to phrases and questions.

Qualitative assessments will revolve around observations collected during the learning activity as to length and level of engagement. The daily communication sheets have a space for teachers to record any incidence of the vocabulary words being used in new settings and how much time the children engaged in the activity that day. Daily conversations with parents at pick-up and drop-off time will also be useful for collecting feedback from parents regarding evidence of transfer of new vocabulary words into home settings. Communications through e-mails are planned to document parents' use of the technology at home. One of the advantages of the UbD plan is that the curriculum remains fluid and evolves as the children's vocabulary and interests change and grow.

The children will choose whether or not to participate when the activities are offered and determine the length of time that they engage the media. A maximum amount of time for each session will be set at 20 minutes to follow NAEYC's recommendations to limit screen time with very young children (NAEYC, 1998). Declining to participate or inability to engage for more than a few moments will signal a need to modify the curriculum.
Development of the Learning Plan

In the UbD design process, the first two stages establish the learning goals and determine a means of assessing learning. The third stage is to design the learning plan.

Getting started. Informing parents about the importance of vocabulary development and inviting them to participate in the curriculum is the first step of this stage. A brief overview of the project will be explained on a postcard to be handed to parents. As a family decides to explore the program, a conference will be set up at a time that is convenient for both teacher and parents. It is the goal of this conference to set goals for vocabulary learning, discuss dialogic reading strategies (Whitehurst, 1992), determine what devices are available or preferred and select the computer applications (app) to be utilized. A quick tutorial should be used to help start the process of collecting images and adding voices or text.

Image collection. Parents and teachers will next begin to set up devices with photographic images, voices, and sign language images. Images should target the vocabulary identified in the conference. Each image should be labeled with text or voice. Several websites provide a dictionary of American Sign Language words in a video format and also as a single static image. Parents and teachers can learn the specific signs and record their own voice saying the word with a still shot of the sign language word.

Sharing technology with toddlers. Once the devices have been loaded with images, they will be shared with the children. During a quiet time of the day, the parents and teachers will invite the toddlers to sit it in their laps as they hold the device that has been loaded with images and voices familiar to the child. Adults should pick a setting that will allow for uninterrupted time. The adults will begin by showing the children the first
photo and talking with them about what they are seeing, using dialogic reading strategies (as explained in the forthcoming literature review) to label the object or person and use the word in a sentence. Adults will ask the toddlers to say the word and demonstrate how to touch the screen to enable the sound or voice so the children will hear it coming from the device. Adults will allow the toddlers to touch the screen and experiment by moving their fingers over the image while the teacher or parent holds the device. Adults will demonstrate how to advance to the next picture and continue to talk with the children about the image, just as was done in the preceding photo. Any words that the children say should be recorded on the word list. The activity continues until the toddlers show signs of inattention or time is exhausted. If the activity has taken place at school, teachers should describe progress toward goals on the daily sheet.

In summary, this project began with identifying standards for vocabulary development that were endorsed by local, state and national early childhood organizations. The main goal that was selected for this project was that toddlers would use an expanding expressive vocabulary to communicate thoughts and needs. The other goals were to help parents feel empowered in the vocabulary learning of their children and toddlers to explore and manipulate technology. Performance based assessments were conceived by thoughtfully considering how the goals for the project could be achieved and what learning would “look like” as it occurred during the learning activities. By design, these assessments need to be formative and performance based for the purposes of shaping the curriculum to better meet the learning needs of the participating toddlers. The learning activities will incorporate research-based vocabulary learning strategies into an interactive electronic format that will be shared between home and school.
Review of the Literature

Early childhood professionals working in toddler classrooms spend a large part of the day focusing on vocabulary development (Wasik, 2010). Recent studies in early literacy have shown the importance of the role teachers play in helping young students build vocabularies that will enable them to become successful readers and writers (Juel & Deffes, 2004; Neuman & Dwyer, 2009; Wasik, 2010).

Although nearly all research agrees that vocabulary instruction should be tied to texts that are read and studied in class, much of the research indicates it needs to be intentional and specific (Neuman & Dwyer, 2009). Juel and Deffes (2004) compare contextual based vocabulary instruction with more analytic, anchored instruction strategies. In contextual based instruction, teachers give the definition or explain a word as they come across it in a read-aloud story. There is no further exploration of the word or follow-up. With analytic and anchored instruction, teachers are very intentional about preselecting vocabulary and providing time for exploring meaning making and even examining the way the word is spelled to see if there are clues to its meaning. The study found that children learned more vocabulary with intentional teaching. Juel and Deffes predominantly focused on learning with older children, but the principle of intentionality translates to vocabulary learning with toddlers as well. Once teachers are focused on the goal of building vocabulary with toddlers, they need to be taught how.

Neuman and Dwyer (2009) examined ten packaged early childhood curricula currently being used in Pre-K classrooms to assess their strengths in building vocabulary, making use of the five following criteria:

- Did the curriculum explicitly identify words to be learned?
• Did the curriculum provide specific strategies to teach those targeted words?
• Was ample opportunity provided for children to independently practice vocabulary in context?
• Were opportunities provided for children to review previously learned words?
• Were strategies for ongoing assessment provided?

Only one of the ten examined products met all five of these criteria. Their study concluded that little is available to help teachers provide explicit vocabulary instruction. Most curricula that are available provide no sound pedagogical principles for teaching vocabulary to young children and most programs show a huge mismatch between the goals that are identified in the curriculum and what is actually done to meet them (Neuman & Dwyer, 2009). While Neuman and Dwyer focused their study on Pre-K classroom curricula, it was noted “Trends in the amount of talk- the actual trajectory of vocabulary growth- and the styles of interaction were well established at 3 years old…” (384). This would indicate a need for these same criteria to be implemented in curricula for toddler age children.

It is evident that increasing children’s vocabulary is crucial for creating successful outcomes in literacy. From the above study we see that simply telling teachers to do this important task is not accomplishing the goal. They must be provided training tools and remain focused on the importance of the job at hand.

The Role of Professional Development

Various strategies can be identified to improve vocabulary development with preschoolers. The question becomes: How do teachers implement these strategies into a seamless vocabulary curriculum to meet the criteria that Neuman and Dwyer have
identified without sacrificing other elements of emergent literacy learning?

**ExCell.** One model that offers professional development for teachers is *The Exceptional Coaching for Early Language and Literacy (ExCell) Program* (Wasik, 2010). In this model, teachers are trained in a group setting in five areas of literacy education with a strong focus on vocabulary development. Those areas are: interactive book reading, guiding conversations across curriculum, phonological awareness, alphabet knowledge and writing. Wasik put a strong emphasis on professional development, a component that she noted as missing in the criteria that Neuman and Dwyer (2009) identified in their article. Neuman and Dwyer seemed to have assumed that all teachers are adequately trained and rich in ongoing professional development. The Wasik (2010) article strongly disputes this. Without this training, it is likely that implementation of even the highest quality curricula will vary across early childhood teachers, undermining efforts to build children's language skills at the very time when interventions could have the strongest long-term effects. (p. 621)

After each of these trainings, a second component is implemented as individual guidance. Literacy coaches visit teachers in their real world settings to model strategies, observe and give feedback to teachers.

**Developmentally Appropriate Practice**

Before any strategy for vocabulary development can be employed, it must first be put through the filter of developmental appropriateness. Considering that the focus of this project centers on very young children, this is especially important. The case was made earlier in this paper for preparing adults to create intentional, well defined objectives for learning. If adults are not also well trained in developmentally appropriate practices for
toddlers, they will have a very difficult time picking a strategy that will be successful. The National Association for the Education of Young Children (NAEYC) has put forth much guidance for early childhood professionals to ensure their curriculum is in line with best practice (Copple & Bredekamp, 2009). In Learning to Read and Write: Developmentally Appropriate Practices for Young Children (NAEYC, 1998) the International Reading Association (IRA) joined forces with NAEYC to develop a position statement to define developmentally appropriate practices centered on teaching children to read and write. The authors define the term developmentally appropriate as “challenging yet achievable with sufficient adult support” (p. 8). “To teach in developmentally appropriate ways, teachers must understand both the continuum of reading and writing development and the children’s individual and cultural variations “ (p. 11).

After an extensive review of research and drawing from the knowledge and experience of their members, NAEYC and IRA concluded that “learning to read and write is a complex, multifaceted process that requires a wide variety of instructional approaches” (p. 8). It is critical that young children are actively engaged in literacy learning experiences that make content meaningful. This position statement focuses mainly on preschool years, but does put forth some recommended teaching practices specifically focused for infants and toddlers. Those practices specifically targeting vocabulary development include talking with toddlers verbally and with sign language, singing, finger-plays and reading board books with children individually or in small groups.

Vocabulary Instruction Embedded in Read-Alouds: A Traditional Approach

For teachers who are focused and trained, many vocabulary-building strategies can
be incorporated into a curriculum. Many of them center on what happens when adults and children come together around a book. Shared storybook reading and read-alouds are strong examples of strategies that adults often use to build vocabulary with toddlers (Juel & Deffes, 2004). One form of shared storybook reading emphasizes the discussions that adult readers and toddlers can have together as they enjoy a book. This traditional approach to vocabulary instruction is embedded in the read-aloud activity and is known as dialogic reading.

**Dialogic reading.** This is an evidenced-based approach to shared book reading where the goal is for the child to become the story teller and for the adult to facilitate, expand, and respond to the child’s verbalizations (Whitehurst, 1992). This strategy is more about reading with children than it is to children. One fundamental dialogic reading technique is the PEER sequence. The adult prompts the child to say something about the book, evaluates the child’s response, expands the child’s response by rephrasing and adding information to it, and repeats the prompt to make sure the child has learned from the expansion. Five different types of prompts are associated with dialogic reading, each requiring a little more sophisticated vocabulary skill. Completion prompts ask children to fill in the blank of a statement about the book. Recall prompts ask questions about specific details in the book. Open-ended prompts make a statement or ask a question that encourages children to talk about the book. Wh- prompts ask “what”, “where” and “why” questions. Finally, distancing prompts ask children to make connections between the events in the book and their own life experiences (Zevenbergen & Whitehurst, 2003).

Dialogic reading is useful because it can be used by teachers at school and also by parents at home. Blom-Hoffman, O’Neil-Pirozzi and Cutting (2006) examine a strategy
for training parents and caregivers in the use of dialogic reading. This study compares the
use of videotape to teach parents the principles of dialogic reading to an actual face-to-
face learning environment. The study finds that the parents and caregivers rate the
acceptability of the video format to be very high. They also find several advantages to the
videotape format over individual or small group instruction. Those advantages are listed
as “cost efficiency, trainer time efficiency, consistency in intervention delivery and the
opportunity for learners to observe people who are similar to them model the target
behavior” (p. 74). Working with Pearson Publishing Company, Whitehurst and his
associates at SUNY produced a product called Read Together, Talk Together (Pearson,
2003). This product consists of a kit containing children’s picture books and
accompanying lesson plans that identify specific vocabulary contained in each book.
These lesson plans give adults specific prompts for each page of the story that are
targeted to build the child’s vocabulary and ability to re-tell the story. Each kit also
contains videotape, which explains the theory and teaches parents and caregivers how to
implement the strategy. The training video lasts about 15 minutes.

**Text Talk.** Another strategy for read-alouds, Text Talk, takes a very different
approach, putting more emphasis on discussion without the reliance on illustrations. Beck
and McKeown (2001) propose that young children are sophisticated enough to work
through challenging material without the context of illustrations or background
knowledge. Reading aloud to them allows them to experience language and ideas that
may be too difficult for them to read on their own. They describe “text talk” as
“decontextualized” language (p. 10). By minimizing the use of pictures, children must
focus on the language in order to gain meaning. The strategy focuses discussion on major
story ideas as they come up in the story and asks children to be reflective by using very specific open-ended questions. Teachers use follow-up questions and employ a technique called “uptake”, in which the adult incorporates previous student responses into new questions in order to introduce students to more sophisticated vocabulary (p. 16).

Teachers intentionally choose words that are unfamiliar yet embody concepts with which children can identify and use again in normal conversation. Teachers assess learning by keeping charts with vocabulary words from each story and adding a tally mark each time the word is used by a student.

The Use of Non-Fiction. Bortnem (2008) also concludes that read-alouds are useful in building vocabulary, but she advocates for the use of more nonfiction in early childhood classrooms. She found that nonfiction reading could elicit more language and child-generated questions; using nonfiction in conjunction with a fiction book on the same topic allows children to dig deeper into the content. She also suggests incorporating manipulatives and extending the theme into other play experiences.

Alternate or Supplemental Models of Vocabulary Instruction

Books have long been the center of emergent literacy vocabulary development and adults should certainly continue to use good literature to stimulate vocabulary development. However, the boundaries of literacy education have been expanded to include many nontraditional strategies such as photography, computer assisted technology, music and sign language.

Albers, Hofbrook, and Harste (2010) compare their own visual, aesthetic art pieces to the meaning making from symbols on a page when we read and write. In their view, practicing artists use “transmediation, a translation of an idea from one sign system
to another" (p. 167). Whether students are translating alphabet letters into sounds or finger positions into ideas, they are working from one sign system to another.

**Photography.** Byrnes and Wasik (2009) point out the need for teaching in early childhood to be engaging, exciting and hands-on. Putting digital cameras in the hands of young learners allows them to become producers of their own symbol making. Children become producers and take more ownership of their learning because they are selecting the subject matter. Photography facilitates vocabulary because they talk about their pictures, explain them to others and use them to retell their stories. Taking cameras out into their world allows children to document picture walks and helps teachers to make a family connection when children are allowed to take the camera home to record what is relevant to them there. Teachers can create games and matching activities where children go on treasure hunts with picture clues—talking as they explore. Byrnes and Wasik include a caution regarding confidentiality and privacy with minors and suggest parent or guardian permission release and consent be acquired before allowing students to take pictures or to have their pictures taken. After obtaining consent, teachers can take those students’ identified interests back into the classroom again as digital photos by incorporating more technology to build vocabulary.

**Electronic Media.** The National Association for the Education of Young Children and the Fred Rogers Center position statement on technology (2012) has opened up the doors to media use for infants and toddlers by specifying that if it is used intentionally and in a format that implements interactive models, it can be effective in supporting learning. Toddlers still need special considerations, but early childhood teachers who are informed and understand the implications surrounding technology use
with the very young can help children and families navigate into responsible digital participants.

In Technology as a Scaffold for Emergent Literacy: Interactive Storybooks for Toddlers (2003), Linda Robinson advocates the creation of electronic picture books that are personalized for very young children. The author proposed, “when used along with traditional storybooks, multimedia versions of books provide children between two and three years of age with an interactive literacy experience shaped by a child’s social and cultural environment, because stories can be personalized.” (p. 44). These experiences will, by definition, include embedded vocabulary learning. Robinson argues that technology can be a means of making literacy instruction and its foundational vocabulary learning relevant by customizing the experience in ways that more traditional strategies cannot accomplish.

Currently, the American Academy of Pediatrics (AAP) strongly cautions the introduction of electronic media to very young children (2011). The AAP points to concern for excessive television and screen time displacing face-to-face time for children under 2 years of age. This concern predominately centers on television watching without parental involvement or when the child is exposed to adult programming that may be playing in the background. The AAP also cites a lack of evidence supporting educational or developmental benefits and the potential for adverse health effects. The policy statement (2011) addresses predominantly television and pre-recorded DVD exposure and did not specifically address other forms of more interactive media.

This caution should serve as a reminder to early childhood teachers to proceed in using technology with toddlers very carefully. Technology should be introduced only
when it can be done in a developmentally appropriate way to imbed vocabulary learning into the curriculum and combine best practice strategies into one seamless format. In this way, technology does not replace other practices; it simply becomes another tool for teachers to add to what they currently use to build vocabulary with toddlers.

Despite the AAP’s recommendations, it is clear that infants and toddlers are not being ignored in the development of technology in media (Anderson & Evans, 2001). More interactive formats that are easily manipulated are being incorporated into toys and marketed to parents who are looking for ways to boost their children’s learning. It is the job of informed adults to ensure these interactive toys will be developed to “allow children to build their own creations or explore the world in ways not possible with traditional toys” (Anderson & Evans, 2001, p. 15). Acknowledging that there is still much research to be done in this area, these authors respond to the concern that media use displaces other valuable interactions.

It should not be taken for granted, however, that because a child has $x$ hours of media use, $x$ hours of other activities are automatically displaced. For example, parents of toddlers may use a program such as Sesame Street as an opportunity to provide verbal labeling for their children (Lemish & Rice, 1986). Certainly toddler use of computers and the Internet, to the extent that it happens, likely occurs on the lap of a parent, with active parental involvement. (p. 13)

Computers and technology can have beneficial outcomes when adults are intentional and selective in choosing media for young children, interact with them in meaningful dialogue and follow up media time with real world connections. These
connections are even more important when we are considering the needs of children with disabilities.

Wilds (2001) discusses the significant advantages assistive technology holds for helping children with disabilities communicate and interact with their environment. She cites choice and control as essential qualities for software use with young children. She also states the importance of being able to make words appear on the screen along with relevant images. This is especially important for children with disabilities because they may require more time and experience to make connections between print, pictures and sound. The points that she raises have relevance for all children, not just those with disabilities. She identifies several criteria that possible applications should meet in order to be considered for use with young children. Programming should have the capability to be personalized with family photos and voices, be easily manipulated by a simple switch or touch screen, and should require minimal training to use. The software should also be readily available and free or at a cost that is not prohibitive.

Parette, Hourcade, Boeckmann and Blum (2008) point out the benefit of using PowerPoint (Microsoft, 2013) to create stories around previously identified vocabulary words. It comes standard on most home and school computers and allows for the use of animation, sound and digital photography to ensure that even very young learners can stay engaged. Teachers can record their own voices reading the story, save it to mp3 format and insert it into a slide show. Parette, Boeckmann & Hourcade (2008) identified Symbols 2000 (Widget Software Ltd, n.d.) as a program to combine symbol making with text and sound capabilities but it is not free of cost. PowerPoint still has the advantage of being free, readily available and familiar to most computer literate consumers. A free
version of PowerPoint, however, does not yet have the capability of embedding audio when used on a tablet or touch screen device.

Music. Paquette and Rieg (2008) propose that using music to build vocabulary is natural and lends to multiculturalism as songs from other cultures can be introduced. Music also crosses into all content areas as teachers get creative and compose their own learning songs to reinforce the content that they are studying. The repetitive nature of many children's songs allows multiple chances for children to practice a new word. Often songs are combined with hand gestures. Hand gestures or finger plays lead into the final frontier in exploring alternative strategies for teaching vocabulary to young children, sign language.

Sign language. Daniels (1996) measured the vocabulary gains of pre-K children over a period of two years to determine whether sign language helped hearing children acquire new language and if so, whether this new learning retained over time. The results were positive on both counts. She then laid out seven reasons why this strategy may be effective. She cites a study by Moore (1970) who documented a fairly small time period for optimal language development, only three to four years of age. These findings would indicate that focusing vocabulary development on pre-school children is catching them at just the right stage in their development. Daniels cited Piaget (1955) when he noted that sign language allowed children to see and feel language move. When adults are signing, children must focus on what is being communicated by looking. In doing so they pick up on other clues like facial expressions and body language giving added contextual clues for learning new vocabulary.
The alternative strategies mentioned thus far have several things in common. They all work well with young children because toddlers often are the most uninhibited learners. All of these strategies see children as a whole being with many different senses that need to be addressed in the learning environment. Incorporating sight, sound, and touch will be more effective than simply using one mode of information. Finally, all of the above articles mention the need for teachers to ask open-ended questions, allow children to make decisions for their own learning, and to create positive spaces where children feel empowered to learn.

Home and Classroom Connections

Early childhood programs have one more powerful ally to utilize as they consider building vocabulary with toddlers – the family. One of the first exciting milestones in the family experience involves the child's first words. As a toddler’s vocabulary expands, parents begin to get a sense of who their child is and what they are thinking. It is a very exciting time for families. Early childhood centers are wise to capitalize on this excitement and support families as they seek to foster vocabulary development. Parents are their babies’ first teachers and they should always be considered the experts on the topic of their own children (Gillespie, 2006). Children learn their language and identity from their families. The need to respect and support families with diverse cultural differences is critical. When teachers and parents work together to provide consistent expectations for learning, children have fewer behavioral concerns and develop stronger social and language skills (Wise, Sanson, & Southbank, 2003).

Involving parents in learning projects is a good way to both gain a better understanding of the home culture and empower parents in their child’s learning (Hensley,
In conclusion, little is currently available in the way of packaged curricula for teaching vocabulary to toddlers. The best solution is to train professionals and parents to create their own developmentally appropriate plans for delivering this important emergent literacy skill and provide a coordinated effort between home and school. There are many strategies currently employed ranging from shared storybook reading to less traditional sign language and music. One format that has the potential to combine several of these strategies involves the use of technology. As long as it is interactive and done collaboratively with caring, informed adults, electronic media can be a powerful tool even for very young children. When adults are focused, trained and equipped, the outcomes for vocabulary development with toddlers are very successful.

The Project

Procedures to Develop the Curriculum

The curriculum-planning template from the *Understanding By Design Overview of UBD & Design Template* (Wiggins & McTighe, 2005) has been utilized to plan the framework of the project (Figure #2). Details for implementation of the project follow the UbD Template.
**Stage 1 Desired Results**

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<thead>
<tr>
<th>ESTABLISHED GOALS</th>
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<td><strong>NAEYC 2.D.02</strong></td>
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<tr>
<td>Children are provided opportunities to experience oral and written communication in a language their family uses or understands.</td>
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| IELS 4.1 |
| Participates in conversations, using both receptive (listening) and expressive (Speaking) language skills. |

| CCG Objective 8: |
| Listens to and understands increasingly complex language. |
| Comprehends language. |
| Follows directions |

| Transfer |
| Students will be able to |
| Independently use their newly learned vocabulary words to participate in conversations, using both receptive and expressive language skills both at home and at school. |

| Meaning |
| Students will understand that... |
| Vocabulary words are powerful tools that can be used to meet their needs and explore the world around them. |

| ESSENTIAL QUESTIONS? |
| What vocabulary words are the most critical to start with? |
| How can we make vocabulary learning individualized and authentic for each toddler? |
| How can we empower parents in their children's vocabulary development? |
| What format could be employed to combine vocabulary-learning strategies? |

| Acquisition |
| Students will know... |
| The names/labels of significant people and things in their environment. |
| The powers of being able to use their vocabulary to problem solve and express themselves in socially appropriate ways. |
| That parents and teachers can work together to support vocabulary learning. |

| Students will be skilled at... |
| Using vocabulary to meet their needs and ask/answer simple questions in a conversational manner. |
| Inferring the meaning of new words from the context of pictures and from dialogue with more knowledgeable others. |
### Stage 2 - Evidence

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<thead>
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<th>Evaluative Criteria</th>
<th>Assessment Evidence</th>
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<tbody>
<tr>
<td>To what extent is the activity promoting the learning of new vocabulary at home and at school?</td>
<td>PERFORMANCE TASK(S): Toddlers will sit with a trusted adult and engage in conversations around the images on the device for an extended period of time, (more than 5 minutes). Children will use their hands to manipulate the images on the device as they listen and say the words from their word lists. Toddlers will transfer newly learned vocabulary words into novel contexts both at home and at school. These experiences will be noted on daily sheets and shared in e-mails or conversations with parents at pick-up/drop-off times.</td>
</tr>
<tr>
<td>Does the new vocabulary transfer to other situations?</td>
<td>OTHER EVIDENCE: Are the parents expressing continued interest in the activity during daily conversations at drop/off and pick/up times?</td>
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</tbody>
</table>

### Stage 3 - Learning Plan

**Summary of Key Learning Events and Instruction**

- Meet with family and secure a touch screen device for them to use at home.
- View video clips on vocabulary development and dialogic reading.
- Identify 18 vocabulary words that they would like the toddler to learn (names of people/pets, verbs, nouns and a few sign language words).
- Send one list home and keep one on the toddler’s clipboard.
- Prepare devices and download apps.
- Collect digital images of vocabulary words. Add Text.
- Load images into device and add voice.
- Select quiet place to sit with toddler.
- The adult will begin by showing the toddler the first photo.
- Employ dialogic reading strategy.
- Introduce voice feature.
- Allow toddler to manipulate images and explore on the device.
- Make notes on the vocabulary list on the clipboard.
- Continue until the toddler is showing signs of inattention or time is exhausted.
- Adults in the classroom should look for opportunities to use the new vocabulary with the child and connect the experience with new situations.
- Any instances of this can be recorded on the daily sheet.
- Share the experience with parent at pick-up time.
- Discuss how parents have been able to implement the activity at home.
Procedures to Implement the Curriculum

The implementation of this curriculum focuses on four key sections: selecting and preparing participants, collecting imaging, using and sharing technology with toddlers and families, and reflective response to learning.

**Selection and preparation of participants.** Families with young toddlers will be provided materials (Appendix A) that communicate the relevance and role that vocabulary development plays in emergent literacy and be invited to participate. After an initial agreement to participate is established, parents and cooperating teachers will confer to:

- Explore dialogic reading strategy by watching a few short video clips and slide presentation (Appendix E),
- Determine electronic devices to be utilized by family and school (Appendix B),
- Select software that will be compatible with all devices, and allow photographs to be embedded with text and sound,
- Select a file hosting service that will allow for the photographs to move between devices and finally,
- Develop a brief list of vocabulary words to be captured in visual images from around the toddler’s home and school (Appendix F).

**Image collection.** Images that represent the vocabulary words will then be collected and shared via a file hosting service. Several software options have been explored for displaying the images. PowerPoint (Microsoft, 2013) is available free of charge, but does not support audio files on an iPad (Apple, Inc., 2013) or other tablets. AlphaBaby (Little Potato Software, 2012) supports audio files, but requires a $0.99
upgrade to hold more than 3 photographs and only works on Mac (Apple, Inc. 2013) devices. BabySmash (Hanselman, 2008) is the Windows (Microsoft, 2013) version of AlphaBaby. Whichever software application is selected, it will need to be one that is compatible with both devices, the one at home and the one used at school.

Once a device is selected and the app is installed, digital images from home can be uploaded to the app in a variety of ways. Parents can take pictures and send them electronically via e-mail, print them off and bring them to school to be scanned into a computer, or use a file hosting service to insert images themselves. An agreement could be reached that would allow parents to check out a device from the school to take home and record images. Teachers can add images from classrooms and playgrounds. Animation and voices can be then be added by parents and teachers to the images. Sign language vocabulary could also be added with voice.

**Sharing the technology.** During free-play time, a toddler can sit in the lap of the adult to access the computer with the child's individualized image library. A child should not be forced or coerced to participate. The child should be allowed to interact with the media at his or her own pace, for as long as he or she sustains interest with a maximum of 20 minutes per session. The toddler should be encouraged to vocalize with the pictures and touch the screen to manipulate images. The adult should be supportive and follow the dialogic principles of prompting, evaluating, expanding and repeating the prompt to make sure the child has learned from the expansion. This is a child-centered experience and so the child is free to repeat an image or activity as often as he or she chooses.
Procedures to Sustain the Curriculum

Once initial vocabulary words are learned, new ones can be added to reflect more complex language structures, moving from single words to prepositional phrases and to full sentences. Sentence types may become more varied, including both statements and questions. Old images should be left on the device to serve as practice and review. The project duration is dependent on parent and child interest and perceived benefits. Daily discussions with parents will help guide the pacing and advancement of the project. Ultimately, as children become more comfortable with the technology, they could take over the decision making for selecting images and even take the photos. Eventually, the children’s voices can be recorded as the narrative for their own productions.

Procedures to Evaluate the Program

Once a child is ready to exit the toddler program and transition to the preschool classroom it would be helpful to sit down with the participating family to reflect on the experience and make recommendations for new parents who may want to use the curriculum. This could happen as a portion of the parent-teacher conference or as a stand-alone conference. Using a prepared guide (Appendix H) to focus the discussion will allow parents to respond with specific feedback, but there should be an open-ended portion to record feelings and attitudes about the experience.

Conclusions and Recommendations

Understanding the importance of vocabulary development and its implications for literacy success, this author sought to identify a cohesive format for combining already established practices with new technology. Neuman and Dwyer (2009) identified five different criteria for vocabulary curriculum. This project successfully satisfies all five of
those criteria. The initial stages of the project identified specific vocabulary words to be taught and planned research based strategies for learning those words. The project included multiple chances for toddlers to practice and review vocabulary words and ongoing assessments to provide feedback for determining when initial goals are reached and more sophisticated vocabulary words or phrases can be introduced. This project also provides explicit direction for adults who implement the curriculum, a concept that Wasik (2010) identified as critical for learning success. Incorporating real images from the toddler’s world speaks to Bortnem’s (2008) research advocating for more nonfiction material in vocabulary teaching. The criteria identified by Wilds (2001) are also present in this work. The considerations she cited for selecting technology to be used with children were (a) the capability to be personalized, (b) the potential to be easily manipulated by children, (c) minimal cost, and (d) minimal training required. Adult interaction and child directed activity help ensure that the project remains developmentally appropriate. The home-classroom connection is strengthened as parents are invited to participate and are included in goal setting, training and implementing the curriculum.

There are those who might argue that toddlers have no business with technology (AAP, 2011). Upon closer examination of the AAP’s concerns, though, it is evident that their concerns centered on the prerecorded videos and television programming of older generations of technology that did not allow for interaction or co-construction of meaning. Current technology of the type recommended in this project provides the means to tailor screen time for toddlers by creating authentic, interactive activities that
children can manipulate with a touch of their fingers. Times have changed and it may be time for the AAP to refine its position based on these advances.

That being said, it is important to note that the single most important factor in bringing toddlers to technology is informed adults. Teachers and parents who are trained and knowledgeable about the hazards as well as the benefits of allowing their toddlers to explore technology will always be necessary. Setting a child down in front of a screen is not the same thing as sitting down with a child who’s holding a screen. The dialog that happens as parents or teachers and toddlers explore interactive media is rich with vocabulary that truly can put the child in control of his or her own learning.

This project demonstrated that if we hold true to what we know about good developmentally appropriate, evidence based practices; we truly can use technology with toddlers. The benefit of the project, besides boosting vocabulary, is the strong potential for involving parents in this process. Acknowledging their role as the primary teachers in their children’s vocabulary development empowers them to get involved in other aspects of our early childhood centers. What a powerful image is created for toddlers when they see teachers and parents working together. It truly sets the stage for the way they will view education for many years to come as teachers and parents work together on the same side to ensure their success. There will be nothing they cannot learn.

While the future of our “techy” toddlers seems bright, we are not there yet. One difficulty that this project encountered was the inability to embed audio files into some applications or video footage into others. It seems that there is just not a “total package” yet that will allow for combining all of the strategies that we recognize as beneficial for vocabulary learning into one format. Surely, someone is working on that app, even as
work on this project concludes. In the meantime, we will need to keep doing all of the things that really engage our toddlers in real life conversations: talking, singing, reading, signing and talking some more until they turn into readers and we sit back and listen.
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Doi:10.1598/JAAL.54.3.1


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Doi:10.1002/pits.20130


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DOI: 10.1598/RT.63.8.1


Appendix A: The Invitation

ALL ABOUT WORDS

TECHNOLOGY TO BUILD VOCABULARY

UNI CDC
2901 CAMPUS STREET
CLARKSVILLE, IA 50613

INVITATION TO PARTICIPATE
A FREE AND VOLUNTARY PROJECT
Children with large vocabularies have an easier time learning to read and write.

If you are interested in learning more about this project, I would like to meet with you. Please contact me:
Gwen Dayton
gwendolyn.dayton@uni.edu
319 273 2263

To the Family of
Appendix B: Survey of Family Devices and Preferences:

**Choosing the hardware:**
What forms of technology do you currently have available at home?
Phone:
Computer:
Tablet:
Other:

Do you have Internet access at home? Yes No

Are you primarily a Mac or PC user?

What experience has your toddler had with technology at home?

What will be the best format to share/send images back and forth from home and school?
File Hosting service
Email
Hard copy
Other:

At school we will be using an iPad and running free or very low-cost apps.
AlphaBaby
(We will need to explore how compatible your devices are with these apps)

Would you be interested in obtaining an iPad for this project as a loan from the CDC if one could be secured?
Appendix C: Photo Release:

RELEASE and WAIVER

I, , as a parent or guardian, understand that the UNI Child Development Center (UNI CDC), University of Northern Iowa (UNI), and the Regents’ Center for Early Developmental Education is requesting my permission to videotape and take photographs of my child and my child’s work, and collect work samples from my child.

I understand that the above-mentioned materials made or collected relating to my child and his/her classmates may be used to promote and teach best practices in early childhood education. I give my permission to the UNI CDC, UNI, and the Regents’ Center for Early Developmental Education to use these materials for educational, promotional, and informational purposes in perpetuity. This includes, but is not limited to, the distribution of UNI produced videotapes and photographs, the publication of articles, the usage of photographs on university websites, and the sharing of materials at conferences, teacher preparation classes and/or lectures or over the internet. We will make every effort to ensure that these activities will not disrupt the normal activities of the classroom.

By signing the top section of this form below, I hereby give the UNI CDC, UNI, and the Regents’ Center for Early Developmental Education all rights to materials made or collected relating to my child in perpetuity; I release them from any and all claims arising out of, or resulting from, my child’s appearance and/or statements, or their use of my child’s work; and I waive all rights of copyright or ownership in or to the resulting educational/promotional/informational materials which relate to my child.

I hereby certify that I have read the foregoing and fully understand the meaning and effect thereof, and intending to be legally bound, sign in the top section below.

Printed Name of child


Printed Name of Parent/Guardian

Signature of Parent/Guardian (Date)

USE THIS PORTION ONLY IF YOU DO NOT GIVE PERMISSION

I do not give permission for my child, (Please print the child’s name) to be videotaped, photographed, or my child’s work to be used for the purposes mentioned above.

Signature of parent/legal guardian Date

Printed name of parent/legal guardian
Appendix D: Tutorial/Checklist of device and tools.

Demonstrate each of the following:

**iPad**
- On/off
- Volume
- Orientation Setting
- Five Finger Swipe technique
- Process for downloading apps

**PICASA**
- How to download
- Import/Export Photos
- Edit Photos and add Text

**Dropbox**
- How to download
- How to invite/share
- How to add and remove items

**AlphaBaby**
- How to download
- How to change settings
- Add/remove jpegs
- Add voice
Appendix E: Dialogic Reading Strategy: PowerPoint, Read Together/ Talk Together

Parent Training Video and Whitehurst video clips

Five slide PowerPoint Presentation

Title slide to introduce topic.

Appendix E Continued

Slide three details from research why Oral language is important for literacy.

A Fundamental Dialogic Reading Technique is the PEER Sequence

- **P** Prompt the child to say something about the book
- **E** Evaluate the child's response
- **E** Expand the child's response by rephrasing and adding information to it, and
- **R** Repeat the prompt to make sure the child has learned from the expansion.

Slide four explains technique
Appendix E continued

Dialogic Reading Prompts

- **Completion prompts**: Good with rhyming, repetitive books. "I think I would be a glossy cat. A little plump but not too ______.
- **Recall prompts**: questions about what has happened. “Can you tell me what has happened to the little blue engine in this story?”
- **Open-ended prompts**: Focus on the pictures in books. “Tell me what is happening in this picture.”
- **Wh-prompts**: what, where, when, why and how questions that teach children new vocabulary. “What’s the name of this?”
- **Distancing prompts**: relate the pictures or words of the book to experiences in the child’s life.

Slide five explains and gives examples of prompts.

View: Read Together Talk Together parent-training video contained in Pearson Kit available through the AEA267 lending library.

View video of Whitehurst describing dialogic reading strategy at:
NATIONAL CENTER FOR LEARNING DISABILITIES

WHITEHURST VIDEO CLIPS

ttp://www.ncld.org/students-disabilities/homework-study-skills/dialogic-reading-video-series
Appendix F: Goal Setting and Vocabulary Word Selection Guide:

List 1 Words

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Note: Fill out both sides identically, cut down the middle and give one to participating family.
### List 2 Phrases: Prepositions and Questions

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Appendix H: Questions to Guide Reflections for Exit Interview:

**Family:**

**Date:**

How would you describe the effectiveness of this project to build your child’s vocabulary?
- Advantages:
- Disadvantages:

How could I have better supported your experience?

How easily were you able to:
- Input the images/sounds into the device?
- Add and retrieve photos from Drop Box?
- Use the device with your child?

How would you describe the level of engagement between you, your child and the technology?

Would you/Did you recommend this program/App to another parent?