Early Educator Central
Pathways to Credentials and Degrees for Infant-Toddler Educators

# Infants, Toddlers and Technology: References for Course Developers

2015

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# Contents



Note: This paper was created through Early Educator Central, a web portal federally administered by the U.S. Department of Health and Human Services, Office of Child Care and Office of Head Start, in response to the need for relevant resources to enhance infant-toddler content and coursework. ICF served as the contractor under Contract #HHSP23320095636WC_HHSP2337034T with the Department of Health and Human Services. The views expressed in the document are those of the author and ICF. No official endorsement by the U.S. Department of Health and Human Services is intended or should be inferred.

# Introduction

The following resource is designed to help higher education faculty who are creating infant-toddler course work for non-traditional students and are seeking materials related to technology. Following a brief explanation of the Know-See-Do-Improve framework, this document provides a table for all references, followed by summaries of articles and a listing of books that include content about technology and infants and toddlers. This is not an exhaustive list of references, but a guide to help think about what content to include when designing coursework. The articles are organized by the two content areas—Technology in the Lives of Infants and Toddlers and Technology Learning and Development—which are tied to the 2010 NAEYC Standards for Initial & Advanced Early Childhood Professional Preparation Programs, specifically 1a- Knowing and understanding young children's characteristics and needs and 1b- Knowing and understanding the multiple influences on development and learning.

## Know-See-Do-Improve Framework

The Know-See-Do-Improve Framework used by Early Educator Central helps guide course designers to ensure elements of the course include not just content (know) but also the important opportunities to see examples of competencies, to do or practice new skills and to then improve through reflective activities. This document focuses on the first element of the framework, with a rationale provided for why course developers should also include opportunities and integration of the other elements of the framework, i.e. see-do-improve.

*Know*—Content that aligns with the National Association for the Education of Young Children Standards for Early Childhood Professional Preparation, Head Start and Early Head Start Relationship-Based Competencies, CDA™ Competency Standards and state core knowledge and competencies can promote a seamless career pathway from state to state and within states across sectors (portable) for the infant toddler workforce.[1] Aligning with NAEYC standards is also a useful strategy to promote articulation.

*See*—Content that includes field-based or web-mediated examples of competency promotes the link between course content and a course participant's ability to understand what that competency looks like in a setting similar to their own.[2]

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[1] U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service. (2010). Toward the identification of features of effective professional development for early childhood educators: Literature review. Retrieved from http://www2.ed.gov/rschstat/eval/professional-development/literature-review.pdf; NAEYC. (2009). *NAEYC Standards for early childhood professional preparation*. Retrieved from http://www.naeyc.org/files/naeyc/files/2009%20Professional%20Prep%20stdsRevised%204_12.pdf

[2] Hamre, B.K., Pianta, R.C., Burchinal, M., Field, S., LoCasale-Crouch, J., Downer, J....Scott-Little, C. (2012). A course on effective teacher-child interactions: Effects on teacher beliefs, knowledge, and observed practice. American Educational Research Journal, 49(1), 88-123. doi:10.3102/0002831211434596; Joseph, G. & Brennan, C. (2013). Framing quality: Annotated video-based portfolios of classroom practice by pre-service teachers. *Early Childhood Education Journal*, 41(6), 423-430; Pianta, R. C., Mashburn, A. J., Downer, J., Hamre, B. K. & Justice, L. (2008). Effects of web-mediated professional development resources on teacher-child interactions in pre-kindergarten classrooms. *Early Childhood Research Quarterly*, 23, 431-451.

*Do*—Infant toddler professional development that provides an opportunity to apply knowledge in work/practicum settings allows caregivers to practice what they have learned and to reflect on their own demonstration of competency.[3]

Suggestions for this area of the framework include opportunities for teachers to video their own practice and then to have the instructor provide coaching to enhance the teacher's practice. This includes designing course activities that include time for planning the integration technology as appropriate and also practicing working with families with technology. Early Educator Central provides The Coaching Companion as an open-source online digital observation tool to aid in this process.

*Improve*—Infant toddler professional development that includes self-reflection and assessment by a professional who uses an evidence-based tool provides the necessary components for competency-based learning and assessment.[4] The final step in the framework provides an opportunity for caregivers to submit a new demonstration (self-selected exemplar) and reflect on change with an expert PD professional. This final step can help to solidify understanding and application of new knowledge and skill.[5]

Overtime, building in feedback loops with teachers will be imperative as they begin to practice new strategies and competencies for integrating knowledge of working with technology and self-reflection into their practice. The use of multiple assessment tools is more effective including the use of observation, self-reflection journaling and discussions with peers. The May 2014 issue of Young Child has a helpful resource, Resources for Technology and Young Children: New Strategies for Teachers and Learners, that may be useful in helping to build reflective practice and activities.

[3] Joseph, G. & Brennan, C. (2013). Framing quality: Annotated video-based portfolios of classroom practice by pre-service teachers. Early Childhood Education Journal, 41(6), 423-430; U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service. (2010). Toward the identification of features of effective professional development for early childhood educators: Literature review. Retrieved from http://www2.ed.gov/rschstat/eval/professional-development/literature-review.pdf; NAEYC. (2009). NAEYC Standards for early childhood professional preparation. Retrieved from http://www.naeyc.org/files/naeyc/files/2009%20Professional%20Prep%20stdsRevised%204_12.pdf

[4] Id.

[5] U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service. (2010). Toward the identification of features of effective professional development for early childhood educators: Literature review. Retrieved from http://www2.ed.gov/rschstat/eval/professional-development/literature-review.pdf; NAEYC. (2009). NAEYC Standards for early childhood professional preparation. Retrieved from http://www.naeyc.org/files/naeyc/files/2009%20Professional%20Prep%20stdsRevised%204_12.pdf

## Quick Reference Table

| Topic Area | Age Group | Document Type | Full Citation |
|---|---|---|---|
| **Technology in the Lives of Infants and Toddlers** | Infants and Toddlers | Research | Kabali, H., Nunez-Davis, R., Mohanty, S., Budacki, J., Leister, K., Tan, M.K., Irigoyen, M., & Bonner, R. (2015, April). *First exposure and use of mobile media in young children.* Presented at the annual meeting of Pediatric Academic Societies (PAS), San Diego. |
| **Technology in the Lives of Infants and Toddlers** | Infants and Toddlers | Research | Rideout, V., & Hamel, E. (2006). The media family: Electronic media in the lives of infants, toddlers, preschoolers and their parents. Menlo Park, CA: Kaiser Family Foundation. Retrieved from https://kaiserfamilyfoundation.files.wordpress.com/2013/01/7500.pdf |
| **Technology, Learning and Development** | Infants and Toddlers | Research | National Scientific Council on the Developing Child (2007). *The Timing and Quality of Early Experiences Combine to Shape Brain Architecture: Working Paper No. 5*. Retrieved from www.developingchild.harvard.edu |
| **Technology, Learning and Development** | Infants and Toddlers | Research | Linebarger, D. L., & Walker, D. (2005). Infants' and toddlers' television viewing and language outcomes. *American Behavioral Scientist*, *48*(5), 624-645. doi: 10.1177/0002764204271505 |
| **Technology, Learning and Development** | Infants and Toddlers | Special Issue Overview | Barr, R., & Linebarger, D. L. (2010). Special issue on the content and context of early media exposure. *Infant and Child Development, 19*(6), 553-556. doi:10.1002/icd.716 |
| **Technology, Learning and Development** | Infants | Research | Dayanim, S., & Namy, L. L. (2015). Infants learn baby signs from video. *Child Development*, *86*(3), 800-811. doi:10.1111/cdev.12340 |
| **Technology, Learning and Development** | Early Childhood | Review of Research | Kirkorian, H. L., Wartella, E. A., & Anderson, D. R. (2008). Media and young children's learning. *The Future of Children, 18*(1), 39-61. |

| Topic Area | Age Group | Document Type | Full Citation |
|---|---|---|---|
| **Technology, Learning and Development** | Infants | Research Review | Krcmar, M. (2010). Assessing the research on media, cognitive development, and infants. *Journal of Children and Media, 4*(2), 119-134. doi:10.1080/17482791003629586 |
| **Technology, Learning and Development** | Early Childhood | Research | Lin, L., Cherng, R., Chen, Y., Chen, Y., & Yang, H. (2015). Effects of television exposure on developmental skills among young children. *Infant Behavior and Development, 38*(0), 20-26. Retrieved from http://dx.doi.org.udel.idm.oclc.org/10.1016/j.infbeh.2014.12.005 |
| **Technology, Learning and Development** | Infants | Research | Meltzoff, A. N. (1988). Imitation of televised models by infants. *Child Development, 59*(5), 1221-1229. |
| **Technology, Learning and Development** | Early Childhood | Research Review/ Practice | Moses, A. (2009). What television can (and can't do) to promote early literacy development. *Young Children*, *64*(2), 80-89. |
| **Technology, Learning and Development** | Early Childhood | Research Review | Richert, R. A., Robb, M. B., & Smith, E. I. (2011). Media as social partners: The social nature of young children's learning from screen media. *Child Development, 82*(1), 82-95. doi:10.1111/j. 1467-8624.2010.01542.x |
| **Technology, Learning and Development** | Infants and Toddlers | Research | Roseberry, S., Hirsh-Pasek, K., Parish-Morris, J., & Golinkoff, R. M. (2009). Live action: Can young children learn verbs from video? *Child Development, 80*(5), 1360-1375. doi:10.1111/j. 1467-8624.2009.01338.x |

## Technology in the Lives of Infants and Toddlers

**Kabali, H., Nunez-Davis, R., Mohanty, S., Budacki, J., Leister, K., Tan, M.K., Irigoyen, M., & Bonner, R. (2015, April).** *First exposure and use of mobile media in young children***. Presented at the annual meeting of Pediatric Academic Societies (PAS), San Diego.**

This presentation shared information on the use of mobile media for young children. Researchers collected data from a prospective cross-sectional survey of parents about the initial exposure to media, the types of activities they engaged in and other related questions about media use and exposure for their children age 6 months–4 years old. Findings indicated that most parents let their child play with mobile media for a variety of purposes: while they were running errands or chores around the house, to help children to calm down and to help children go to sleep. Conclusions included that children are exposed to mobile media devices typically early and typically are using the devices by two years old. This presentation called for additional research into the use of mobile media devices.

**Rideout, V., & Hamel, E. (2006). The media family: Electronic media in the lives of infants, toddlers, preschoolers and their parents. Menlo Park, CA: Kaiser Family Foundation Retrieved from https://kaiserfamilyfoundation.files.wordpress.com/2013/01/7500.pdf**

The authors of this report, from the Kaiser Family Foundation, promote that media is an integral part of our lives. To this end, this report offers information generated from a national study with a survey of parents and a series of focus groups. The content of this report includes how much time infants, toddlers and preschoolers spend with media, the types of media they interact with and the role of media in their environments. In sum, this article offers a clear picture of how media is used in the lives of infants and toddlers.

## Technology, Learning and Development

**National Scientific Council on the Developing Child (2007).** *The timing and quality of early experiences combine to shape brain architecture* **(Working Paper No. 5). Boston, MA: Center on the Developing Child at Harvard University. Retrieved from www.developingchild.harvard.edu**

This working paper from the National Scientific Council on the Developing Child shares information on how the timing and the quality of early experiences influences brain architecture. Overall, brain architecture is influenced by a "mutual experience" of genetics, environment and experience. The authors stipulate that the experiences a child has available during key times of development and the quality of the early environment strongly influence developing brain architecture. This influence on brain architecture also impacts the ability of children to regulate their emotions and to think. Early experiences that are stimulating help to "lay the foundation" for children's later learning. Thus, as the authors state, the early years hold "great opportunity and great vulnerability" for brain development. This working paper continues by explaining popular misrepresentations of science

and refuting them. This includes the fact that the chance to influence brain development does not end at three years old and that there is no "credible scientific data" to support the idea that videos or certain music can effect the development of brain architecture. As the authors share, media cannot take the place of interactions with supportive adults. The report ends by sharing implications for research and policy.

**Linebarger, D. L., & Walker, D. (2005). Infants' and toddlers' television viewing and language outcomes.** *American Behavioral Scientist*, **48(5), 624-645. doi: 10.1177/0002764204271505**

The authors provide data from a study that followed 51 infants and toddlers every 3 months starting at 6 months of age. Parents filled out a log about the programs that children watched on television. This log also included information about the content of the programs and the intended audience for the program. The relationship between vocabulary, language skills and television contact was investigated. In sum, the findings showed that when considering the effect of the media it is relevant to consider the program type and content.

**Barr, R., & Linebarger, D. L. (2010). Special issue on the content and context of early media exposure.** *Infant and Child Development*, **19(6), 553-556. doi:10.1002/icd.716**

This special issue discusses the content and context of early media exposure for infants and toddlers. There are six articles that cover a variety of issues in this area. As the authors of the introduction to the special issue share, there are two purposes of this issue: a) there is a need to focus on the ecological perspective, considering the context and content of media exposure for young children; and, b) to empirically show the shift to research investigating causal mechanisms with the effects of media exposure.

**Dayanim, S., & Namy, L. L. (2015). Infants learn baby signs from video.** *Child Development*, **86(3), 800-811. doi:10.1111/cdev.12340**

This article marks the first experimental study to demonstrate infants learning expressive language (sign language) from an educational video. The authors used a sample of 92 toddlers who were assigned to four different groups: watching a video with a parent, watching a video alone, parents teaching sign language using a picture book and a control group with no sign language shared. Findings indicated that children were able to learn sign-language with the help of the video even without parental assistance. Limitations to this study were also shared.

**Kirkorian, H. L., Wartella, E. A., & Anderson, D. R. (2008). Media and young children's learning.** *The Future of Children*, **18(1), 39-61.**

In this article from The Future of Children, the authors review relevant research to form recommendations on how to increase media's positive effects and mitigate the negative effects on young children. Specifically, this review concentrates on television and its effects. The literature

includes information about the effects of television on children under two, and the potentially unique effects. This article also includes research on the impact of television and preschool aged children. The article concludes with policy recommendations and practical recommendations for parents.

**Krcmar, M. (2010). Assessing the research on media, cognitive development, and infants.** *Journal of Children and Media*, **4(2), 119-134. doi:10.1080/17482791003629586**

The author in this article discusses the relevance of addressing the research on media, cognitive and language development for infants. This literature review includes research about infants' language development and their attention and imitation with television. This review includes a discussion of infants' difficulty in learning and imitating from television. The author posits that this may be due to infants' perception of television as socially irrelevant and other ideas. Overall, the author illustrates the need for additional research on language acquisition and media usage and the author provides ideas on the capacity for television to teach cognitive skills to infants.

**Lin, L., Cherng, R., Chen, Y., Chen, Y., & Yang, H. (2015). Effects of television exposure on developmental skills among young children.** *Infant Behavior and Development*, **38(0), 20-26. Retrieved from http://dx.doi.org.udel.idm.oclc.org/10.1016/j.infbeh.2014.12.005**

The authors of this study seek to better understand how the amount of time children, under 36 months, spend watching television affects their cognitive, language and motor development. Two groups of children were studied who had either recurrent exposure to television or irregular exposure. Findings indicated that children with the recurring exposure to television were at increased risk of delayed motor, language or cognitive development.

**Meltzoff, A. N. (1988). Imitation of televised models by infants.** *Child Development*, **59(5), 1221-1229.**

The purpose of this study was to decipher if infants could pick up information from a 2-dimensional representation (television) and then transfer the information into their 3-dimensional behaviors. The researcher investigated three groups of infants who were introduced to a novel toy and a television that showed an experimenter playing with the toy and demonstrated taking it apart and putting it back together. The findings indicated that infants could use a two-dimensional model to help guide their three-dimensional behavior. The author stressed the possibility these findings evoke for the influence television may have on infant behavior. Limitations were addressed. Implications of the findings include the need to continue studying the nature of the ecology of infants and social development.

**Moses, A. (2009). What television can (and can't do) to promote early literacy development.** *Young Children*, **64(2), 80-89.**

The author begins by discussing the conflicting views of scholars with regard to the benefits of media and the relationship between media and children's literacy development. However, most of the research suggests taking a "moderate stance" to the positive or negative viewpoint of television viewing. The author discusses research findings about television and young children mostly from age 2-5. She discusses the following major areas: a) what kind and how much television do children watch; b) the impact on television for early literacy skills; c) the literacy content and messages within popular programs; and, d) how to capitalize on television promoting literacy development. The author concludes with revisiting the moderate stance on television viewing for literacy support, as many times it depends on how much and what type of programs young children are watching. The author also stresses the careful consideration that must be integrated into the use of media by young children.

**Richert, R. A., Robb, M. B., & Smith, E. I. (2011). Media as social partners: The social nature of young children's learning from screen media.** ***Child Development*****, 82(1), 82-95. doi:10.1111/j.1467-8624.2010.01542.x**

The authors provide a review of research about screen media and children age birth through three. They also discuss the research regarding preschool aged children. In reference to children birth to three, the authors cover the literature on perception, symbolic representation, imitation and word learning as it relates to screen media. Overall, the research demonstrates that children view television figures differently than real life people. The findings also point to the importance of the social nature of learning and how it relates to learning from screen media. Policy implications include the need for awareness that learning from screen media is limited in the early years and continued research is needed in this area.

**Roseberry, S., Hirsh-Pasek, K., Parish-Morris, J., & Golinkoff, R. M. (2009). Live action: Can young children learn verbs from video?** ***Child Development*****, 80(5), 1360-1375. doi:10.1111/j.1467-8624.2009.01338.x**

In this article, the authors describe three studies that were conducted to investigate the ability of young children to learn verbs through video. The first study examined if young children could learn verbs from watching a video with social support. The second study looked for verb learning from just watching a video. The third study sought additional information about the benefits of the social interaction for verb learning by having the experimenter on a video instead of in person. Findings indicated that young children learn verbs with video and social support while older children can learn verbs from just video. The authors discuss the findings in reference to two different literatures, television and word learning.

## About the Author

With over 20 years experience in the field of early childhood, Kelley Perkins has worked as a teacher in early childhood classrooms, an administrator in infant/toddler and preschool programs, a technical assistant and in specific policy oriented positions. Additionally, she has experience designing higher education courses and extensive knowledge of designing and implementing professional development opportunities in the field. Currently, she is an Assistant Professor at Rowan University in Glassboro, New Jersey.