EDUCATIONAL PRESCHOOL PROGRAMMING IN THE US
An ecological and evolutionary story

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*This article attempts to explain the present state of educational preschool programming in the context of an ecological and evolutionary model. We propose that three groundbreaking shows (*Sesame Street, Blue's Clues*, and* Dora the Explorer*) have contributed to the present wealth of quality television options for this age group in the US due to the unique way they responded to the larger sociocultural and political climate, as well as their innovative approach to format, curriculum, and research.*

The fact that there are now numerous high quality educational television programs available to American preschoolers has not gone unnoticed. According to Hendershot (2004), the recent "preschool programming boom" is related to an increase in advertising dollars spent on children's television shows during the 1990s, which gave rise to more shows, now with specific age targets. Fisch (2004) suggests that the current interest in creating preschool shows, often focused on school readiness, can be attributed to a national focus on early education in addition to the financial success of early pioneers, like *Sesame Street* and, later, *Barney and Friends*. The growth of cable, competition between networks and the popularity of videos and DVDs also boosted the number of shows and raised the quality bar (Hendershot, 2004).

Bryant and Monge (2008) explore how organizational and institutional ecological and evolutionary models, which hearken back to biological concepts of change and examine that change from macrolevel perspectives, can be applied to better understand how the children's television community has transformed over time. Bryant (2007) similarly maintains that there are many players in the children's television process, and that the children's television community is affected by what happens in the larger sociopolitical and economic environment. She argues that taking a macrolevel organizational approach one can examine this community as a system that evolves over time due to internal dynamics and external pressures. Organizations within an industry, as well as communities of industries, interact with one another in response to changing environments and resources (e.g. financial, sociopolitical, natural). As they evolve and coevolve, they change the environment itself. According to Bryant and Monge (2008), among the key dynamic processes in the evolution of the children's television community is punctuated equilibrium, encompassing both moments of radical transformation and gradual change (Tushman & Romanelli, 1985). Extreme changes in the environment, such as the Reagan Administration's deregulation

of children's programming, or significant changes within the industry, such as the success of *Sesame Street*, create periods of radical transformation. It is important to note that these ecological models come from the organizational literature and focus on how institutions and industries change over time. They are different from the human ecology models often associated with Urie Bronfenbrenner's (1917 – 2005) work (e.g. Bronfenbrenner, 1994).

Using this organizational framework, we argue that the radical transformations in American preschool television programming have also happened within an ever-changing sociocultural political context and through a process of punctuated equilibrium, where there are critical moments of change. In her ecological systems approach, Bryant (2007) maintains that both the environment at large as well as individual populations (e.g. entertainment content creators, advertisers, toy companies, governmental bodies) within the system together affect the evolution of the children's television community. One such population is educational content creators. Here we narrow our investigation to a slice of this population to examine how a specific content area within the children's television community, namely educational preschool programming, changed over time based on what was happening at the environmental, community, and organizational levels.

This article further builds upon Bryant's (2007) ecological and evolutionary framework by also focusing on the internal dynamics of the system. We propose that three key players within the population of educational preschool programming coevolved with one another, subsequently significantly transforming the system, and, as a result, the environment. We focus on three revolutionary programs (and the organizations that produced them) that have fundamentally changed what American preschoolers and their parents see on television: *Sesame Street*, *Blue's Clues*, and *Dora the Explorer*. Despite these programs' global successes, we focus here on the American preschool television community only. These shows developed partly due to larger environmental changes that were occurring within American society. They were also innovative in the format they took, how curriculum was incorporated, and the research process they integrated into development. The advances each production organization made in these key areas fundamentally altered the norms of the larger preschool television community, thereby bringing about periods of dramatic change.

The following analysis highlights the four factors we believe are critical to educational preschool programming: the environment, program format, curriculum, and research. We focus on *Sesame Street*, *Blue's Clues*, and *Dora the Explorer* due to their enormous success, evidenced best by high ratings and cultural impact (e.g. press, awards) in the United States. Although preschool educational programming was relatively absent from American television until the late 1960s with *Sesame Street*, because, along with most children's programming it was considered unprofitable (Mitroff & Stephenson, 2007), there were a few exceptions. *Captain Kangaroo* and *Mister Rogers Neighborhood*, initially only broadcast locally, were programs that had some educational value and were loved by preschoolers and their parents (Bryant, Bryant, Mullikin, McCollum, & Love, 2001). These programs laid the groundwork for some of the media devices used later, such as directly addressing viewers and following on-screen interactive prompts with pronounced pauses in anticipation of viewers' responses.

An Ecological and Evolutionary Analysis of Preschool Educational Programming

A show's educational value is largely based on how it is developed and produced. Approaches to the creation of educational preschool programming vary as to their

incorporation of research into the production process, the role of program goals in episode creation, and the involvement of consultants in the creative process. Educational programs can be categorized as curriculum-driven, goal-based, or FCC-friendly (see Bryant, 2001, for more). The rest of this article focuses on three curriculum-driven preschool programs, *Sesame Street*, *Blue's Clues*, and *Dora the Explorer*, and how the innovations in four key areas made by the organizations producing these groundbreaking shows altered educational preschool programming. The first area pertains to their unequivocal engagement with the larger sociocultural and political environment of the time, and the other three are internal factors concerning the show's format, curriculum, and research process.

The Environment

Every preschool program is developed in a certain time and place which impacts the direction taken by that show's creators and producers. Political leadership, recent legislation and regulation, economic climate, general social sentiment, and the state of technological development and infrastructure affect what programming is produced and how (Bryant, 2007; Bryant & Monge, 2008).

Sesame Street.   The first season of *Sesame Street* produced by Children's Television Workshop (CTW) aired in 1969 as a direct response to what Palmer and Fisch (2001) describe as "an urgent and otherwise unmet national educational need" (p. 4): to educate America's underprivileged young. Advancing the school readiness of 3- to 5-year-olds was promised to bring about benefits that would stay with children well into adulthood. The belief, which stirred controversy among experts, was that proper preschool preparation would allow children to absorb more upon entering kindergarten, and ultimately succeed not only there, but beyond (Morrow, 2006). As with Head Start, the goal was to teach children basic educational skills. The medium, however, was television. *Sesame Street* emerged from a unique time in American history. With the Civil Rights movement underway and high levels of government funding in education under President Lyndon's Johnson's Great Society (Palmer & Fisch, 2001), the moment was ripe for "an educational Tipping point" (Gladwell, 2000, p. 89). After FCC Commissioner Newton Minow's 1961 declaration that television presented a "vast wasteland," NBC, CBS, and ABC offered a handful of educational options (Schneider, 1987). But the limited popularity of these shows (e.g. *Exploring*, *Reading Room*, and *Discovery*) led advertisers to lose interest. It was not until the launch of the Public Broadcasting Service (PBS) in 1967 that a new model for educational programming surfaced; maintaining advertisers' interest was no longer necessary (Mitroff & Stephenson, 2007). CTW responded to this new opportunity by creating *Sesame Street*, which was backed by grant funds and aired on PBS.

Joan Ganz Cooney, the first CTW director, envisioned the show in response to the sociopolitical conditions and educational needs of the time (Morrow, 2006). These forces, coupled with the growth of public broadcasting and the fact that 97% of American households had television sets when *Sesame Street* premiered (Palmer & Fisch, 2001), laid the groundwork for this television experiment. *Sesame Street* proved not only that television could teach (Fisch, Truglio, & Cole, 1999), but that learning could be fun. Its audience and financial success paved the way for *Blue's Clues* and *Dora the Explorer* by creating a space for educational preschool programming, where none had been before.

Blue's Clues.   When *Blue's Clues* was introduced by Nickelodeon in the 1990s, most educational children's television shows were, like *Sesame Street*, on public television (Tracy, 2002). This was largely due to the deregulatory policies of the 1980s under President Ronald Reagan, part of a larger initiative to revive a struggling economy. Though the Children's Television Act (CTA) of 1990 stated broadcasters were required to provide educational and informational programming, without concrete guidelines about content, amount, and scheduling the act went relatively unheeded (Kunkel & Canepa, 1994).

When the FCC's 1996 rule that commercial broadcasters had to show 3 hours of educational children's television per week went into effect in 1997 (Jordan, 2004), Nickelodeon had already identified preschool educational programming as an opportunity with $60 million invested toward a new preschool television block called Nick Jr (Tracy, 2002). In addition to *Blue's Clues*, Nick Jr also featured *Allegra's Window* and *Gullah Gullah Island*—all curriculum-driven preschool alternatives to *Sesame Street*. Within 2 years of *Blue's Clues*' 1996 launch, the *New York Times* boasted the following headline: "Move Over, Big Bird: A New Blue Dog's in Town" (Mifflin, 1998). *Blue's Clues* quickly surpassed *Sesame Street*'s ratings, opening the door for a new kind of educational television show, later espoused by the creators of *Dora the Explorer*.

Blue's Clues was an economic and educational success. Like their *Sesame Street* predecessors, the *Blue's Clues* creators responded to an unmet need: to provide children with an educational option amid prevailing programming. The deregulatory policies of the 1980s had resulted in a sea of profitable but educationally poor shows (Kunkel & Canepa, 1994; Mitroff & Stephenson, 2007). The *Blue's Clues* team recognized this educational white space early on. The creators saw the need for educational programming before the CTA amendment forced networks to provide it. Addressing this gap in such a timely fashion gave Nickelodeon a first mover advantage: "There was a vacuum waiting to be filled" (Hendershot, 2004, p. 9)

An educational preschool show that could teach and entertain was not new; *Sesame Street* had proved that this marriage was possible. *Blue's Clues*, however, transformed the space which *Sesame Street* had created and laid the groundwork for the next revolutionary giant. The early commercial success of *Blue's Clues*, particularly with consumer products (Tracy, 2002)—which took *Sesame Street* several years and a dramatic strategic shift to achieve (J. G. Cooney, personal communication, April 3, 2003)—paved the way for additional resources to be invested into educational preschool shows.

Dora the Explorer.   The television community at large was increasingly being forced to recognize a new space for financial opportunities (Fisch, 2004). This space was soon filled again by Nickelodeon, with *Dora the Explorer*. Structured around bilingualism, the show features the first Latina lead in preschool television (Diaz-Wionczek, Lovelace, & Cortés, 2009; Ryan, 2010). Due to the increasing importance of computers at the time of its 2000 premiere, the series was also created to explicitly develop preschoolers' technological literacy (Cortés, Diaz-Wionczek, & Lovelace, 2009; see Format subsection later). In addition to receiving awards for championing Latino culture and the Spanish language (e.g. the ALMA, Imagen), *Dora the Explorer* is among the most watched preschool shows in the United States (Nielsen Media Research, 2009).

A strong motivation for creating *Dora the Explorer* was to address the relative absence of Latino characters on US television (Scannell, 2002). The Latino population is the fastest growing in the United States, currently surpassing 45 million (about 15% of the population)

(US Census, 2008). Thirty-five percent are under 18, compared with 26% nationwide. However, through the late 1990s, Latinos have been consistently underrepresented on television, including children's programming (Borzekowski & Poussaint, 1998; Lovelace, Scheiner, Dollberg, Segui, & Black, 1994) with the exception of *Sesame Street*. Latino children are less likely to see their ethnicity represented on television as compared to White and African American children (Akerman, Strauss, & Bryant, 2008; Children Now, 1998). Therefore, "*Dora the Explorer* just might be the first icon for the children of a new America" (Arrieta, 2008).

Similarly, other than those on *Sesame Street*, lead females have also been underrepresented in preschool programming, as compared to US Census estimates, for over 30 years, despite research suggesting viewers identify with same-gender characters (Hoffner, 1996; Martin & Halverson, 1981). While Blue (a puppy) was implicitly created as a female character to address this, Dora explicitly offered preschoolers a female lead. As such, *Dora the Explorer* overtly demonstrated the power of women and little girls to solve problems and achieve goals. The creators wanted "a girl with short hair, a little tomboyish, who was more interested in adventure and exploring than someone who thought a lot about what she looked like" (Chris Gifford, quoted in Arrieta, 2008). To succeed in her adventures, Dora uses her intelligence, courage, and empathy.

Dora the Explorer was created to address Latino and female underrepresentation on children's programming by providing preschoolers a powerful image to combat this counterproductive television trend. *Sesame Street* and *Blue's Clues* both laid the foundation for a strong female Latina lead, and Dora represents the next phase in the evolution of preschool television characters. As Ryan (2010) concludes from her analysis of the show, "episodes of *Dora the Explorer* appear to empower preschoolers, young girls, and Latinas in various ways" (p. 65).

Format

Because preschoolers are more perceptually oriented due to their developmental stage (Strasburger, Wilson, & Jordan, 2009), the design and delivery of their programming is crucial for attention, comprehension, and appeal. Production elements such as writing, visuals, pacing, layout, and narrative components contribute to the show's format. Each of the production organizations behind the revolutionary programs made specific format innovations that affected the norms for preschool educational programming.

Sesame Street. Each *Sesame Street* episode contains a series of distinct and autonomous vignettes. As such, the hour-long show follows a "magazine" format (e.g. Gladwell, 2000; Lesser, 1974), with approximately forty segments (Palmer & Fisch, 2001). *Sesame Street* was formulated as an "edutainment" show (Morrow, 2006). The CTW, now Sesame Workshop, team felt to be effective with children, a show had to be entertaining—as well as educational. "They did not want it to be didactic and pedantic" (R. T. Truglio, personal communication, April 29, 1999).

In creating edutainment, *Sesame Street* combined the forces of academicians and producers to form a curriculum heavily weighted toward cognitive development in a captivating, commercial-length format complete with songs and Muppet-filled fun. "Each show featured a different letter or number and contained quick, staccato messages similar to the catchy phrases or jingles in television commercials" (Schneider, 1987, p. 173). Cooney's (personal communication, April 3, 2003) conviction that even young children were highly

media literate due to their exposure to different media and camera techniques (via e.g. animation, music, live action) contributed to the adoption of a revolutionary format (Lesser, 1974). Because, Cooney asserted, children's media experiences had conditioned them to expect fast-paced programming, *Sesame Street*'s lessons were communicated as bite-sized learning skits—a decision critiqued by some parents, journalists, and academics as "unsuitable" for its rapid and commercial style (Hendershot, 1998). For years, notable child experts, like developmental psychologists Singer and Singer (1979), had criticized *Sesame Street*'s fast paced format. Several television critics, cognitive psychologists, and educators objected to the commercial pace and techniques employed (Morrow, 2006; Schneider, 1987).

The Workshop's dedication to edutainment was, nevertheless, highly informed by the children's educational television landscape of the 1960s. Until *Sesame Street*, most educational children's shows were overtly instructive, often following a classroom or "storybook television" format (Palmer & Fisch, 2001; Schneider, 1987). Ratings indicated that most were poorly received. *Sesame Street* changed educational programming because it was created with the then pervasive belief that "children would not watch instructive, schoolroom type material unless it was encapsulated in a more entertaining format" (Schneider, 1987, p. 169). Despite its detractors, the magazine format of *Sesame Street* was a success and, with some modifications to include more long-form narrative (in part due to the popularity of *Blue's Clues* and *Dora the Explorer* discussed later), is one it has retained to the present day.

Blue's Clues. *Blue's Clues* co-creator Todd Kessler describes his suspicion, after working on *Sesame Street*, that "kids didn't have short attentions spans" (Gladwell, 2000, p. 110). This hunch, armed with child development theory and research from expert advisers, led the creative team to replace *Sesame Street*'s magazine format with a half-hour single story line. Ratings quickly confirmed his conviction (Tracy, 2002). The show's success was largely attributed to its appealing characters and innovative format: a simple narrative developed around three clues that viewers were asked to identify and use to solve a puzzle.

A growing body of psychological theory and research described the importance of narrative as an organizational structure to make sense of individual experiences and the larger world (Bruner, 1990). Evidence was mounting that even young children used stories, albeit simpler ones, as meaning-making devices (Nelson, 1989). Though bearers of bedtime stories who listen to their infants' "crib talk" may have suspected such was the case, Bruner (1991) firmly asserted that "narrative comprehension is among the earliest powers of mind to appear in the young child" (p. 9).

Blue's Clues capitalized on young children's narrative affinity and communicated its lessons using a simple story format, thereby staunchly differentiating itself from *Sesame Street*. The show was not only entertaining and educational, but extremely simple in format, delivery, and content. Prior research had demonstrated that children would attend to programming if the content was comprehensible (Anderson & Lorch, 1983). Knowing this, the creators of *Blue's Clues* kept the storyline as basic as possible. They also accommodated preschoolers' seeming need for (and love of) repetition (e.g. Mares, 1998) by airing each episode five days a week, which facilitated learning and program involvement (e.g. answering viewer-directed questions, pointing to the screen) (Crawley, Anderson, Wilder, Williams, & Santomero, 1999).

Whereas *Sesame Street* aimed to please with rapid pacing, catchy music, funny voices, life-sized Muppets, and guest celebrities, *Blue's Clues* grew out of a different time. The fear that children would not watch educational programming, sparking the edutainment

movement of the 1960s, was gone. It was replaced by a certain confidence, due to the research of Dan Anderson, the program's chief advisor, that preschoolers would watch television shows as long as they could understand their message(s) (see Anderson, 2004, for a review). Anderson's work demonstrated that children are "active" television viewers (Anderson & Lorch, 1983). The creators of *Blue's Clues* were less focused on a message that would *entertain*, and more focused on one that children could *comprehend*.

With its single story line, continuous screen shots, and familiar home environment, *Blue's Clues* attempted to educate via active audience participation to encourage ownership and content mastery (Anderson et al., 2000). Whereas *Sesame Street* had incorporated some explicit requests for audience participation in its programming, *Blue's Clues* did so more extensively and overtly (e.g. more requests, longer pauses following prompts). Each episode directly engaged viewers via questions from the live-action host alongside formal invitations to play games and "help" solve mini-mysteries. Preschoolers were part of the action and became even more integrated when *Dora the Explorer*, born of this participatory model, emerged.

Dora the Explorer.   Whereas *Sesame Street* presents a nonnarrative format and *Blue's Clues* employs a "seminarrative" (i.e. each clue segment is interchangeable without impacting the final outcome), *Dora the Explorer* employs a formal linear narrative. Each program format is an evolution of the prior. The sequence of events in *Dora the Explorer* is clearly highlighted on the Map at the beginning of the episode, which revolves around an adventure loaded with high-stakes situations, climax, and resolution.

With the viewer's help, Dora overcomes structured challenges to reach the ultimate goal. To support children's problem-solving skills, viewers are, as in *Blue's Clues*, asked to solve problems and become active participants in each learning opportunity. Throughout the show, Dora models problem-solving strategies, such as taking time to think about a problem, using what you know, breaking problems down into smaller units, asking for help, and, most importantly, persevering until you reach your goal (Diaz-Wionczek et al., 2009). Although *Blue's Clues* introduced narrative and interactivity, *Dora the Explorer* pushed these to a higher level by presenting a formal linear narrative as a high-stakes adventure wherein the solution of problems *requires* the participation of viewers—Dora could not do it without them.

When *Dora the Explorer* was conceived in 1999, the need to help preschoolers develop technological literacy was urgent. To address this, Dora lives within a computer/fantasy world that seamlessly embeds the conventions and icons of computer technology within the show structure (Cortés et al., 2009). For example, an onscreen arrow clicks, drags, and highlights objects. The cursor arrow also models effective problem-solving strategies and directs viewers' attention to the relevant parts of each problem thus acting as a cognitive organizer, encouraging all children to solve the problem successfully. Furthermore, many game segments within the show resemble an arcade-style computer game and look similar to what children might play on a CD-ROM, or see on a computer screen. This use of computer conventions, formats, and features is intended to increase their familiarity with technology within new learning opportunities.

The show's format was also designed to instill an appreciation and awareness of Latino culture. From the art design and songs to the way obstacles are embedded into the environment, *Dora the Explorer* communicates a vibrant Latino flavor. The very manner the Spanish language is introduced is intended to enhance preschoolers' appreciation for the value of communicating in another language; within every episode, problem-solving activities are designed to develop children's comprehension of and ability to use Spanish

words or phrases (see also "Curriculum," later). The interactive style which *Sesame Street* utilized and *Blue's Clues* revolutionized, *Dora the Explorer* formalized.

Sesame Street Revisited.   Forty years after the first experimental season, the modern *Sesame Street* is different from its original. The success of *Blue's Clues* and then *Dora the Explorer*, as well as internal research, prompted show producers to incorporate more narrative. In its thirty-fourth season, "*Sesame Street* transformed its magazine format to tell exceptional, uninterrupted, narrative stories" ("*Sesame Street*'s Production Staff," n.d.).

Since *Blue's Clues* and *Dora the Explorer* had become extremely popular with 3- to 5-year-olds, the same age group *Sesame Street* was developed to serve, and because the audience for *Sesame Street* started skewing younger, Sesame Workshop expanded the show's curriculum to include 2-year-olds' needs. This was accomplished, most notably, with "Elmo's World." The hour-long show currently follows a 45/15 format—the regular, now 45 minute, show is followed by a 15 minute show-within-a-show, called "Elmo's World," for the younger (2- to 3-year-old) viewers.

Curriculum

To varying degrees, educational preschool programs incorporate learning goals. The nature and kind differ depending on whether, for example, goals include cognitive, social, and/or behavioral components, specific/general content areas, and are stated or implied. The curriculum aspect of these three revolutionary shows was of critical concern for the production organizations and has become a key differentiator for these programs within the larger set of preschool educational programs.

Sesame Street. Sesame Street created the paradigm for curriculum-driven programming. According to Palmer and Fisch (2001), "prior to Sesame Street no other television series had attempted to address a curriculum that was as detailed or stated in terms of measurable outcomes" (p. 9). Every season has a "Statement of Instructional Goals for the xth Experimental Season of *Sesame Street*." Furthermore, every show segment has a curriculum goal; over the course of the season, segments are combined to create episodes. Unlike past educational shows, the curriculum documents state each goal in clear and unambiguous terms (Palmer & Fisch, 2001).

"Over the years, the *Sesame Street* curriculum has grown, but at its core remains the first curriculum developed in 1968" (Lovelace, 1990, p. 47). That curriculum focused mainly on advancing the "school readiness" of 3- to 5-year-olds. *Sesame Street* communicates lessons about cognitive tools like numbers and letters as well as interpersonal concepts like cooperation and fair play (Fisch et al., 1999). Once it became established that viewers could learn from viewing, *Sesame Street*'s curriculum expanded and evolved (Bryant, Alexander, & Brown, 1983); greater emphasis was given to social developmental learning (Lesser & Schneider, 2001). Broadening the program's agenda clarified that "*Sesame Street* is a comprehensive curriculum, dealing with the whole child" (R. T. Truglio, personal communication, April 29, 1999).

The initial goals for the first season fell under four main categories: symbolic representation (e.g. letters, numbers), cognitive processes (e.g. perceptual discrimination, ordering), the physical environment (e.g. the natural environment, man-made environment), and the social environment (e.g. social units, social interactions) (Lesser &

Schneider, 2001). That curriculum was (and is) expanded and revised with each season to include new objectives and/or focus more deeply in an area. The success of this early model showed the viability of curriculum-based programs in the marketplace, and opened the door for new types of curricula to be embedded into television shows.

Blue's Clues.   Like *Sesame Street*, each *Blue's Clues* episode was curriculum driven and attempted to incorporate what preschoolers were learning in school. The show's mission was "to challenge and empower preschoolers while making them laugh" (A. Wilder, personal communication, April 2, 1999). Guided by the curriculum, the show's writers looked to preschoolers' worlds for inspiration in creating televised games that incorporated thinking, prosocial, socio-emotional, and perceptual skills (Wilder, 1996). The types of thinking skills included: sorting; categorizing and classifying; differentiating and discriminating; predicting and anticipating; what happened and why; ordering and sequencing; patterning; matching; inferential problem solving; associating; analogies; and relational concepts (Wilder, 1996; see also Tracy, 2002).

What differentiated *Blue's Clues* from prior educational shows was its "think along, play along" style which encouraged preschoolers to use higher order cognitive skills in dealing with everyday issues with relevance to *them* (Anderson et al., 2000; Wilder, 1996). The "flexible thinking skills" program, which aimed to get preschoolers kindergarten-ready, was also developed to build self-esteem and amuse. Because the show was based on real-life preschool experiences or "situated cognition" (Wilder, 1996), the *Blue's Clues* team hoped viewers would apply what they learned to real life.

The *Blue's Clues* curriculum additionally emphasized Bloom's (1956) thinking skills taxonomy by targeting skills within games and layering them throughout episodes (Wilder, 1996). By varying the difficulty level within each episode, viewers who repeatedly watched an episode (e.g. five times a week) could then build upon their program familiarity and attain higher message comprehension (Huston & Wright, 1998). The taxonomy of skills, from lowest-order to highest, are: (1) recall, (2) apply and comprehend, (3) analyze, (4) synthesize, and (5) evaluate (Wilder, 1996). To plan each episode around this layering model the writing, production, and research teams relied heavily on one another (discussed further in the "Research" subsection, later).

Dora the Explorer.   *Dora the Explorer* followed the *Blue's Clues* "play to learn" tradition by investing viewers in the emotional stakes of a problem, presenting it in an entertaining way, and having viewers discover solutions alongside their favorite characters. True to the "flexible thinking" philosophy, the show was designed to prepare preschoolers for a rapidly changing world by providing tools to make them better thinkers (Nick Jr, 1999).

The show's primary goals are to: (1) support problem-solving skills; (2) encourage and reinforce preschoolers' emerging cognitive skills in multiple intelligence domains; (3) increase appreciation and awareness of Latino culture, introduce the Spanish language, and enhance preschoolers' appreciation for communicating in another language; and (4) increase familiarity with computers by using the conventions and vocabulary of computer games (Nick Jr, 1999).

To encourage and reinforce preschoolers' emerging cognitive skills in multiple intelligences, viewers practice problem solving and engage in activities using the seven domains of intelligence defined by Gardner (1993). In every *Dora the Explorer* episode, Gardner's seven intelligences are presented as follows: visual/spatial (e.g. using the Map,

finding embedded figures); verbal/linguistic (e.g. learning and using a Spanish word or phrase); logical/mathematical (e.g. enumeration); bodily/kinesthetic (e.g. gross and fine motor skills, processing sequential instructions); musical/auditory (e.g. repeated simple songs, identifying nonverbal sounds); interpersonal skills (e.g. cooperation); and intrapersonal skills (e.g. reflecting on feelings).

Similar to *Sesame Street*, *Dora the Explorer*'s curriculum has also evolved. In response to Gardner's addition of naturalistic intelligence (Checkley, 1997), Dora's cousin Diego was introduced in 2003. According to Gardner (1999), individuals with naturalistic intelligence are more in tune with nature and often interested in nurturing, exploring the environment, and learning about other species. Diego was introduced as a guest in Dora's world to portray this intelligence (in season 4), but then launched as a spin-off show. He demonstrated naturalistic intelligence by being interested in animals, understanding their needs, and using this knowledge to problem-solve. After four successful seasons, three of the seven intelligences were readdressed in a more complex fashion: verbal/linguistic (e.g. using a two, or more, word phrase in Spanish); logical/mathematical (e.g. expressing positive attitudes about math, enumeration emphasizing the teens); and interpersonal (e.g. meeting a friend from a different cultural background, learning a skill from him/her) (Nick Jr, 2007).

Research

The final key component in producing these three revolutionary shows is the method of research each production organization employed. Research for preschool programming can aid in preproduction plans, production, and/or postproduction, and ranges greatly with respect to goals, frequency, and importance to the production team. Choice of methodology, the decision to use internal or external researchers, and the extent to which research is integrated into the show's development and production jointly make up the program's research approach and agenda.

Sesame Street.   "As novel as the use of a substantive educational curriculum was, *Sesame Street*'s use of formative research was equally revolutionary" (Palmer & Fisch, 2001, p. 14). Although collecting data to guide show improvements may now be standard practice, this was not so 40 years ago. Created as an experiment, the CTW model described as "an interdisciplinary approach to television that brought together content experts, television producers, and educational researchers to collaborate throughout the life of the project" (Fisch et al., 1999, p. 166) has endured. Sesame Workshop continues to integrate research and production into every *Sesame Street* season, episode, and segment. In addition to collecting formative research to guide curricular and production improvements, the research team works with producers to seamlessly integrate the season's curriculum and measure the show's educational effectiveness via periodic summative evaluations, conducted in-house and by external evaluators (e.g. Ball & Bogatz, 1970; Bogatz & Ball, 1971; Palmer & Fisch, 2001; see Fisch et al., 1999 for a review).

As for the internal research process, at the beginning of a season the *Sesame Street* curriculum is reviewed and revised to meet preschoolers' current needs (R. T. Truglio, personal communication, April 29, 1999). The Workshop also maintains close contact with the National Association for the Education of Young Children (NAEYC), and conducts formative research with preschool children to stay abreast of their needs and current trends in preschool education. That said, formative research was initially conceived to ensure that

the Workshop could meet its ambitious educational goals. Bryant et al. (1983) describe how, prior to broadcasting, program segments were rigorously pretested with children to examine "at a minimum, attention-getting potential, appeal, and comprehensibility" (p. 3).

The research department continues to assess these areas with children from local day care centers in the New York area. Whereas some of the initial formative research techniques employed were extremely detailed, such as the "distractor technique" which provided 7.5 second accounts of whether preschoolers were watching the show, other methods were also developed to assess attention, appeal, and comprehension (Morrow, 2006; Palmer & Fisch, 2001). These entailed presenting program materials to groups of children and conducting structured interviews, in addition to observing behavioral viewing patterns (e.g. watching, dancing, singing, talking to the screen) in response to test episodes or program segments. Irrespective of methodology, the data collected was always used to aid production decisions, often resulting in significant modifications to shows tested with preschoolers—a technique that was subsequently embraced by *Blue's Clues* and *Dora the Explorer*.

Blue's Clues. *Blue's Clues*' integration of research and production evolved from the Sesame Workshop model described earlier. It was the first program to which Nick Jr dedicated an entire research team. As with *Sesame Street*, each episode's development relied heavily on formative research. However, the *Blue's Clues* team revised the research model to fit their curricular goals and format. Throughout the creation of an episode, researchers tested elements of the show to see if they were accomplishing the associated curriculum goals. After being initially scrutinized by the research team, each script was then taken to different schools in the New York tristate area; one episode took about 1 year to complete (Tracy, 2002). The end product was a curriculum-driven educational television show based on functional skills in preschoolers' lives.

Each aspect of an episode underwent three test phases: concept evaluation, video evaluation, and content analysis (Anderson et al., 2000). Similar to *Sesame Street*'s current model, the first two phases were conducted in a naturalistic preschool environment. After a writer discussed his/her ideas with researchers, curriculum-based goal sheets were created, and the script was tested in three different schools (Tracy, 2002). *Blue's Clues* employed a storybook testing format—the show was narrated to groups of preschoolers as a series of pictures on paper. If extensive changes were required based on children's responses, the script was rewritten and re-tested. If not, the show was translated to rough video form, without animation, to allow for further changes, and considered complete. Final testing informed changes to be incorporated into future or other in-production episodes (Tracy, 2002).

Gladwell (2000) commented that "*Blue's Clues* engages in much of the same kind of research as *Sesame Street*—but at a far more intense level" (p. 127). While that may be so, it is also true that the very concept of using formative research for educational preschool programming, which came into fruition with *Sesame Street* in the late 1960s, paved the way for *Blue's Clues* to create its own model. Whereas the *Sesame Street* research function included communicating with the academic community, the public, governmental agencies, and private foundations, in addition to conducting formative research and contracting summative evaluations (Palmer & Fisch, 2001), the *Blue's Clues* model clearly emphasized formative research. After all, individual scripts were tested numerous times and often dramatically altered based on children's feedback before appearing on screen. In many ways this rigorous pretesting resembles Lesser's (1974) accounts of the early days of *Sesame Street* when individual segments were tested with children and, if met unsuccessfully, dropped from the

program. Like *Sesame Street*, the Nick Jr in-house research team also collaborated with academics to evaluate the program's educational effectiveness. Research results demonstrated not only that preschoolers learned from *Blue's Clues* (Anderson et al., 2000), but the more they watched, the more they gained (Crawley et al., 1999).

Dora the Explorer.   As with *Sesame Street* and *Blue's Clues*, research similarly plays a fundamental role in the production and success of *Dora the Explorer*. To ensure that curriculum goals are met, children like the show, and viewers understand the narrative each episode is also tested at three phases of development from the time a story is conceived to when the episode is ready to air (V. Lovelace, personal communication, February 19, 2009).

Once the writers come up with an episode's concept, a storybook that recreates what will happen is produced (Nick Jr, 2008). The research team and writer visit two preschools to get input from about thirty children. Stories change, sometimes significantly, as a result. Once the main storyline and educational content is settled, the story is turned into a script, and a series of sketches are drawn as a blueprint of the future episode (Nick Jr, 2008). Most animated television shows and films create an "animation blueprint" to guide how each scene will work in the final, fully animated version. *Dora the Explorer*'s research model uses this product as a second research tool to assess what parts of the show are working best, and which ones still need modifications. Trained coders note attention and interaction points as children are given the choice to watch and interact or play with distractor toys (V. Lovelace, personal communication, February 19, 2009).

Once the full-color animation is ready, the episode is shown again to children for an emergency check and to inform future episodes (Nick Jr, 2008). Like *Blue's Clues*, the full process takes almost 1 year per episode. The Dora research model has been so successful at informing production, that it has been emulated by other productions by Nick Jr (e.g. *Go, Diego, Go!*, *Ni Hao, Kai-lan*, and the recently released *Team Umizoomi*).

Conclusion

We have focused on the three most successful preschool programs in the United States over the past 40 years—both financially and in terms of audience popularity and cultural impact. The four factors outlined here, the environment, program format, curriculum, and research, are crucial to the success that these programs have found with their audience, and with critics, and are integral to the trio of programs' educational value. A summary of these four factors is provided in Table 1.

The producers and organizations that developed these programs did so in response to the sociopolitical and cultural environment of their time, as well as in response to what other organizations in this space were (or were not) producing. In this way, the program development decisions made within one organization creating educational preschool programming directly impacted the other organizations in that population. The popularity and financial success of *Sesame Street* showed that there was an economically viable opportunity for other educational preschool programs. The success of the show actually created untapped resources within the population of educational content creators, both from a financial perspective as well as from a sociopolitical capital perspective.

Blue's Clues was built by Nick Jr through reliance on those financial, particularly licensing revenue, and sociopolitical capital resources within the population, as well as through additional resources available because of the regulatory climate in the US. Its success then

TABLE 1
Evolution of preschool programming

Factor	Sesame Street (premiered 1969)	Blue's Clues (premiered 1996)	Dora the Explorer (premiered 2000)
Environment: programming develops in a sociocultural political environment	Civil Rights Movement President Johnson's Great Society PBS launches Increased attention to early education	Few educational TV options (due to President Reagan's deregulation policies) FCC enforces educational/informational programming in 1996 Nickelodeon launches Nick Jr	Latinos underrepresented on TV, but fastest growing segment of US population Similarly, few female leads in preschool programming
Format: production elements like writing, visuals, pacing, layout, and narrative components make up a show's format	1 hour; magazine format Edutainment show: entertaining and educational Fast paced	$\frac{1}{2}$ hour; single story line Interactivity: viewers are active participants Slow paced; repetition within show and of episodes	$\frac{1}{2}$ hour; formal linear narrative High-stakes boosts interactivity Conventions/icons of computer technology Latino art design and music
Curriculum: learning goals can be cognitive, social, and/or behavioral; content areas can be implicit or explicit	Advances "school readiness" (cognitive tools and interpersonal competence) Initial goals: symbolic representation, cognitive processes, the physical and social environment New goals added each season	"Flexible thinking skills" program includes: sorting, categorizing, differentiating, etc Employs a "think along, play along style," encouraging preschoolers to use cognitive skills in everyday life	Utilizes Gardner's (1993) seven intelligences: visual/spatial, verbal, linguistic, logical, mathematical, etc Increases appreciation of Latino culture and introduces Spanish language
Research: depending on program goals, research can aid preproduction plans, production and/or postproduction; methodological choice varies	Formative research, integration of season's curriculum, and summative evaluations Attention, appeal, and comprehension assessed via structured interviews and behavioral observations	Show elements tested via concept evaluation, video evaluation, and content analysis Storybook testing, script rewritten and retested	Testing with storybook (story concept), rough animation (to improve attention/interaction), and full-color animation (to inform future episodes)

redefined the educational preschool programming resource space, creating new resources that the creators of *Dora the Explorer* could tap into. This also altered the environment and resource space within which *Sesame Street* was being developed, making it necessary for Sesame Workshop to alter its approach to fit into this new environment. Nick Jr created *Dora the Explorer* in response to how these other two shows had affected the resources and environment, and subsequently created new models for format, curriculum, and research.

Although we have only focused on the radical changes brought with, and looked deeply into the evolutionary interplay among, these three programs for the educational preschool programming niche, it is important to take a step back to understand the impact they had on the larger population of organizations over the past several decades. The changes that each of these three programs brought to the creative and production norms of the educational content creation population and the expectations of the audience, government regulators, consumer advocacy groups, and financial analysts cannot be underestimated. Each responded to the sociopolitical and cultural environment by using the resources available to them, but in turn altered that environment and those resources. Those impacts affected all organizations creating educational preschool programming at those moments—after all, they were being developed in those environments and with those resource constraints. The success or failure organizations had in developing other shows, therefore, was intimately linked to these über-programs.

There is one final, critical aspect of these revolutionary programs that we have not addressed directly—their entertainment value. That "special sauce" from the creative and production teams is fundamental too, but analyzing that aspect of development is outside the scope of this article. Understanding the success of these programs from an entertainment perspective would be a welcome addition to this dialogue, and would benefit content creators and academics alike.

Preschool educational programming in the United States has come a long way in the past 40 years, and its success is widely recognized. There is still room for improvement, however, and as the world around preschoolers changes, so must their programming. We are now firmly situated in an era of multiplatform content that will affect each of the factors outlined here. If the past is precedent, then the industry should find the next revolution both challenging and fruitful.

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