



READY TO LEARN: Literature Review
PART 1: Elements of Effective Educational TV



CHILDREN'S MEDIA CENTER

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Ready To Learn.



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READY TO LEARN: Literature Review Series

- Part 1: Television Can Teach
Elements of Successful Educational Television
- Part 2: Teaching Language & Literacy on Television
Language and Literacy Television & Outreach
- Part 3: Language & Literacy Constructs for Preschool
Language & Literacy Constructs for K – 3rd Grade

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Television's impact on viewers has been of concern since the flickering blue box began its insidious trickle into every room in our homes. For some, the seemingly passive way in which viewers interacted with the medium led to conclusions that television was a threat to intellectual development (Postman, 1982; Winn, 1985). To others, the concern was that viewing was replacing more cerebral pursuits (Dorr, 1986). And the subject matter, often violent or persuasive, was anticipated to be negatively impacting the social development of children (John, 1999; Kunkel, 2001; Smith, Wilson, Kunkel, Linz, Potter, Colvin et al., 1998). With both the intellectual and interpersonal evolution of the world's citizens in peril, it is no surprise that research examining this dodgy, yet ever so alluring, medium has been extensive over the years.

Literacy is customarily defined as the ability to read and write. And, since it has long been understood that children who 'fall behind' academically, especially in terms of literacy skills, may become unsuccessful adults and possibly a financial drain on society (Barnett, 1985; Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002), it is no surprise that researchers working in a variety of fields took to heart the concern that television viewing might be exacerbating the chance of this downward slide. Today, there is a large body of research which suggests that those who believe all forms of programming are dangerous, numbing our minds and wasting our time (Mander, 1978; Postman, 1982), may be failing to distinguish between a multitude of variables that alter the relationship between medium and viewer. The most important of which may be content.

Producing television programming that encourages the social and cognitive development of children requires an understanding both of how children learn and also of how the non-interactive content of broadcast television can facilitate this learning. For successful learning to take place a child must first attend to the lesson, understand the lesson and then transfer knowledge acquired during that lesson to the same or unique situations when encountering them in real life (Fisch, 2004). Media that support this quality of learning will assist children to 1) learn with understanding, 2) construct new knowledge from existing knowledge, 3) take control of their own learning, and, ultimately, 4) develop competence in a particular domain (Bransford, Brown, & Cocking, 2000).

It can be done. Programming which has been produced with the intention of instructing viewers, when compared with the standard commercial fare, has been found to successfully impart academic information and support a child's school readiness and early literacy skills with long-term benefits reaching well into adolescence (Anderson et al., 2001; Fisch, Truglio & Cole, 1999; Linebarger & Walker, 2004; Rice et al., 1990; Wright & Huston, 1995; Wright et al., 2001). This report reviews that research and offers producers and educators alike an overview of the essential elements of educational television that can support the development of language and literacy abilities in young children.



A Brief History of Teaching with Television

Many of the earliest studies on television and academic achievement were naturalistic in form comparing children who had access to the medium (experimental group) with those who did not (control group) (Corteen & Williams, 1986; Hornik, 1978; Schramm, Lyle & Parker, 1961) without examining particular programs or content type. These early studies were based predominantly on the displacement hypothesis; the idea that television replaces time spent in more academically worthwhile pursuits such as reading and therefore negatively impacts literacy skills. In a study run by Schramm, Lyle and Parker (1961), first grade students in a town with television were compared to children who had access only to radio. Their results found that children of medium or high IQ benefited (i.e., scored higher on language achievement tests) from having television access. This is contrary to results found by both Himmelweit, Oppenheim, and Vince (1958, in Williams, Haertel, Haertel, & Walberg 1982) and Corteen and Williams (1986) whose findings suggest that the addition of television slows down the acquisition of reading competency.

Studies that followed these, rather than comparing access to lack thereof, investigated the impact of time spent viewing on reading and school achievement (i.e., academic grades, teacher reports, and standardized tests) (Burton, Calonico & McSeveney, 1979; Fetler, 1984; Gadberry, 1980; Hornik, 1978; Morgan & Gross, 1980; Roberts, Bachen, Hornby & Hernandez-Ramos, 1984; Scott, 1956; Zuckerman, Singer & Singer, 1980). Viewing quantity, for these studies, was calculated either through retrospective determination of time spent watching or by way of viewing diaries kept by participants. Similar to the earlier research, the results for these studies were contradictory. Scott (1956) found television to be a negative influence on academics, with those who viewed more television scoring lower on achievement tests than those who viewed less. Ritchie, Price and Roberts (1987) found that the quality and quantity of the impact of televised content depended upon viewer age. And Fetler (1984) found that economic considerations were the key variable. In fact, it may be that TV viewing is curvilinearly correlated to academic achievement for low SES students, with the positive impact turning negative at approximately 4 hours of viewing per day. Unfortunately, the results of most of these studies appear to be confounded by variables not assessed (Hornik, 1981): socioeconomic status (SES), IQ, parental control, individual motivation, all must be considered in order to clearly indicate an effect (p. 196)¹.

¹ For complete reviews of the early research see Hornik (1981) and Williams, Haertel, Haertel & Walberg, (1982).

Although much of the early research investigating television's potential impact on children demonstrated that heavy viewing led to a hindrance in language development more recent research appears to indicate the more likely relationship lies with the quality of content viewed rather than simply with the time spent in front of the set.

Sesame Street

Sesame Street needs little introduction. Nevertheless, one cannot speak of television designed to educate, or research on educational television for that matter, without giving *Sesame Street* its due. Born from the 1960's concern with the shockingly poor literacy skills of American kids – particularly children from low-income families - *Sesame Street* has, since its inception, sought to support the early language acquisition of pre-school children. Its creation may even be earmarked as the tipping point at which interest in the medium's educational potential took its positive turn. Summative research on the first two seasons of the program found that viewers, no matter their SES, gender, geographic location, or age, showed significant gains in the academic areas addressed by the production (i.e., letter and number recognition, geometric shapes, and relational concepts)(Ball & Bogatz, 1971). Since that time, a wealth of research has examined the program finding its viewers, particularly those from high poverty homes, are better prepared for school than children who did not watch (Rice et al., 1990; Wright & Huston, 1995). These effects appear to exist no matter the language in which the content is presented (Diaz-Guerrero, 1974; S. M. Fisch, Truglio, R.T., & Cole, C.F., 1999; Reiser, 1988) and whether the research took place while the child watched at home or in an experimental setting (Ball & Bogatz, 1971). A longitudinal study found that early viewing of *Sesame Street* has a beneficial impact on academic and social skills for years to come (Anderson et al., 2001)².

Ultimately, the research on television and learning has enabled the creation of a check-list of sorts for creators of educational programming for children that, when used appropriately, can help support learning both academic and social, and language and literacy acquisition in particular.

² For a complete review of the research on *Sesame Street* see Fisch, Truglio & Cole, 1999.

HOW KIDS LEARN

Educational television for the pre-school and early elementary aged child is most successful when developed with an understanding of the developmental stages through which a child progresses. By recognizing the characteristics of a child's cognitive processing we can better understand how that child might comprehend and learn from media. Children in what Piaget referred to as the Pre-operational stage (approximately between the ages of 2 and 7) learn very differently than older children. They use symbols to represent objects and if these objects are moving the pre-operational child believes them to be alive and have human consciousness. At this age children have difficulty conceptualizing time. They are influenced by fantasy and assume that everyone sees the world from their point of view. They are linear thinkers and so the temporal order of a television program's storyline is very important as young children may be unable to fill in the blanks or relate to flashbacks. The pre-operational child needs to follow a task right to completion and, because they have low retention, often enjoys seeing things and hearing stories over and over again simply because they cannot remember having seen it in the past. As the repetitions occur the child is beginning to recognize elements she has seen before, she is developing mastery, and mastery makes the story just that much more fun.

- Animate inanimate objects
- Fantasy is fun
- Keep the story in a logical order (no flashback)
- Ensure the story comes to its logical conclusion
- Repetition leads to mastery

One particularly salient feature of this time in a child's cognitive development is the need for the child to play an active role in his or her own learning.

Active Learning

Successful learners are considered active learners. Active learners are aware that they are learning. That means, recognizing ones strengths and weaknesses and having the ability to monitor ones understanding of the content. It also means constantly making adjustments to support comprehension during the learning process. This active learning is referred to as metacognition, or an awareness of how one thinks. Children can learn to improve their metacognitive skills by making predictions, identifying failures to understand, activating appropriate background knowledge, planning ways to remember important content, and monitoring comprehension (Bransford et al., 2000). Successful educational television programs will stimulate these same metacognitive skills. Programs designed to

aid literacy will support a child's competence in language development as he moves from novice to expert. To do this a television program must enable a child to relate knowledge already assimilated to new information, make deductions beyond the facts provided, and draw conclusions based on these identified relationships (Bransford et al., 2000). The more a child knows about a particular domain, in this case language, the easier it becomes for that child to learn information he has never before encountered (Bransford et al., 2000).

Learning to View

Children who are learning to read must first come to understand the association between letters and words. Similarly, before children can be efficient at comprehending the messages of television they must first come to understand some rules about the forms it takes (Huston & Wright, 1983). These "forms" or "formal features" of television are invisible to most experienced viewers; they include the editing techniques of both the picture and the sound; camera moves (tilts, pans, and zooms); the musical score and pacing of the show. These features provide meaning to the experience of watching (Calvert, Huston, Watkins, & Wright, 1982, Campbell, Wright, & Huston, 1987). They are the means by which information is conveyed, and therefore affect how that information is processed (Neuman, 1995). They denote content to which attention should be paid. It is the manner in which these features are utilized that enables children to make sense of what they are watching. As they become experienced at using and understanding television's format, children are then capable of a deeper processing of the televised information (Neuman, 1995; Salomon, 1979). This is where the program's design comes into play. A successful educational television program will capture a child's attention, engage him cognitively, and maintain that attention throughout the lesson—no easy feat.



Part I: ELEMENTS OF EFFECTIVE EDUCATIONAL TV

Educational television that can successfully teach keeps in mind the cognitive process of the young child and the forms or “formal features” of the medium while developing the instructional content in order to capture the attention of viewers and keep them cognitively engaged throughout.

Capture and Maintain the Viewer’s Attention

The only way a television program can inform its viewers is by capturing and maintaining their attention throughout the show. Since most educational television has its sights set on teaching the youngest of viewers, considerable research has been aimed at determining the elements of a program’s content that not only attract kids but engage them cognitively as well (Campbell, Wright & Huston, 1987; Crawley et al., 2002; Lorch & Castle, 1997; Rolandelli, Wright, Huston & Eakins, 1991).

Most of the research has measured the amount of time children spent looking at the television set and relating this time to various manipulations of the content’s appeal. In some cases the researchers investigated attention on a deeper level. Crawley and her colleagues (1999), for example, defined attention to television not only as looks but also as verbal or non-verbal interactions with the show. Others investigated auditory monitoring of the television along with visual attention (Rolandelli et al., 1991) and determined that children may still be listening to the show even when not looking directly at the TV. In their research, Lorch and Castle (1997) maintained that children’s engagement with the content increased as the length of their looks at the television screen increased. The longer they look the more they’re engaged. The more they’re engaged the more chance of teaching them something!

It seems reasonable to conclude, therefore, that a program can guide the amount of mental effort a viewer invests by increasing the viewer’s attention to the television screen. But, to capture children’s attention, the program simply must appeal to them. To create programming that educates even while it entertains, both the formal features of the medium and the instructional content must be taken into consideration.

Using Television's Formal Features

The formal features of the medium are the soul of any television program. Simply put, they are the sounds, pictures, and story-telling techniques, such as editing style, camera moves, visual dissolves, music, sound effects and pacing that make up or support the content of a show. They are often the reason we initially tune in. The child focused formal features that appear most effective in motivating kids to watch and keep them watching throughout an episode include³:

- Bright colors
- Lively music
- Goofy characters
- Repetition of activities.

Of course, even when children have chosen to watch a television show, they often engage in other activities simultaneously such as coloring or playing with toys. Consequently, when competing activities exist, the viewer's attention is divided and comprehension is in jeopardy (Lorch & Castle, 1997). Still, even though children may not keep their eyes on the television set the entire time a program is on-the-air, they appear to keep listening (Hawkins, Kim & Pingree, 1991), turning their attention back to the set when they are cued to do so by those same production features (Anderson, 1998). For most pre-schoolers the cue that material is likely to be interesting and comprehensible to them often comes in the form of ⁴:

- The voice of a child
- The voice of a woman
- The voice of one of the program's characters
- Lively music
- Wacky sound effects

³ (Campbell, Wright & Huston, 1987; Crawley et al., 2002)

⁴ (Huston & Wright, 1989).

Appealing and Comprehension-Enhancing Content.

As children flip through the channels, it may be the formal features that indicate to a child a program is meant for them, but it will be the content that keeps them watching. If children determine that a program is *not* intended for them (e.g., if its content appeals to adults) or is incomprehensible to them (e.g., if it is in a language they don't understand) they will look for some other way to pass the time (Campbell, Wright & Huston, 1987; Lorch & Castle, 1997). Content that is appealing to child viewers offers onscreen characters who,

- carry out mental activities for the viewer (e.g., “This is how I’ll complete the task” or “I think I know how to do this”)
- model activities (e.g., carrying out the steps for completion)
- suggest the steps the viewers can take to carry out the activity themselves (Wright & Huston, 1984).

These same characteristics also support a child’s motivation for learning and literacy development (Schunk, 1987).

Still, it’s important these fun elements don’t overwhelm the intended lesson. Much research has determined just how these features are best incorporated into a program intended to instruct.



Content with a Lesson

For a television program to instruct, appealing to viewers is only one half of the educational program producer's challenge. Research involving educational television has found that, to support learning while viewing, a television show must be designed with the intention of educating and provide content that instructs while it entertains. Aside from the academic content, particular teaching strategies have been found to be especially useful for enhancing a child's learning while viewing.

Program Familiarity

To every experience in life we bring a pre-existing idea of what that experience will be like. Television is no different. Understanding, before tuning in, what a particular program might be like means that the child will know what events might occur during the program, how the characters will behave, and what the motives are behind their actions (Fisch & Truglio, 2001). Additionally, familiarity with a show's format will guide the viewer's attention and comprehension of the information being presented and reduce the demands of processing the entertaining content leaving the real processing available for the lesson being offered (Fisch, 2000). Therefore, for a program to draw on existing knowledge and facilitate learning more readily a television program will offer,

- a standard set of characters appearing on each episode

We also know that children may attend more to, and learn more from, onscreen characters who are like them or familiar to them (Van Evra, 1998). Fisch (2000) found that a child's learning from viewing will be enhanced by,

- offering a diverse set of characters
- representing the body of viewers ethnically, and developmentally
- putting characters into situations that reflect a viewer's real life

This "modeling" of the child at home, in addition to offering familiarity with a television program, is also an important element for increasing a child's literacy and language learning. Modeling is discussed further in the section entitled "Learning Along with the Viewer."

Direct Interaction with the Viewer

An entertaining technique used on many programs, particularly programs for children, is the offering of characters that break the proverbial “fourth wall” and speak directly to the viewer at home. Wondering if this direct interaction might facilitate learning (by modelling the way in which an instructor speaks one-on-one to a student), researchers have examined the impact of interactive media and distance education (Kawachi, 2003; Ricci, 2002). While television may not be the epitome of interactive media, the research of Ricci and Beal (2002), and Kawachi (2003), provides insight into how children might learn from onscreen characters who speak directly into the camera and, arguable, directly to them. Kawachi (2003) found that this face-to-face interaction by an online tutor who gave explicit examples of relevance to the at-home learner increased that learner’s intrinsic motivation for academic and vocational tasks. It stands to reason the same might be true for the character who is instructing the child at home to “think about it” or “take a guess.” Of course, computer based learning is more than simply an instructor speaking directly to camera. The learner at home often guides his own way through the lesson by clicking on different aspects of a program. Ricci and Beal (2002) hypothesized that the learner’s control over the lesson may be the integral part of his learning more so than the instructor alone. Since the at-home viewer cannot control the direction of the lesson or speed at which information is presented, it is exciting to discover that Ricci and Beal (2002) found no indication that control over the lesson enhanced recall. Viewers can learn the same amount whether they are simply viewing or have some control.

In fact, research examining the impact of viewing the preschool series *Blue’s Clues* has found this to be true (Anderson et al., 2000; Crawley et al., 2002). *Blue’s Clues* has been designed with the intention of eliciting verbal reactions from the viewer at home to help solve a puzzle. The research suggests that children become familiar with the format of the show and the interaction involved and the more they view the more their effort towards helping solve the problem increases (Crawley et al., 2002). Research by Troseth and her colleagues (2006) suggests this increased effort may be the result of social cues provided by the onscreen character which suggest they are conversational partners with the child viewer.

- Use consistent formats
- Have characters speak directly to the home viewer
- Have characters pause to allow viewers at home to reply to questions

Jylha-Laide (1994) suggests this learning while viewing might be due to body language. Just as a teacher in a classroom makes actions to support instruction, so often do the characters on TV. It is this implicit information, the linking of words and actions, which may make language learning particularly synergistic to the medium of television. This idea was supported by the research of Fisch, McCann Brown and Cohen (2001) who investigated programs, such as *Teletubbies*, which use mainly nonsense words and implicit information to educate their viewers. Their research found that children were able to understand the content of a program in spite of its lack of real language; the implicit information was enough. While it may be true that body language is enough to convey information about behavior and storyline, it is important to note that other research indicates the use of nonsense words may interfere with word learning (Linebarger & Walker, 2004)

- Body language tells a story
- Nonsense words are dangerous - to teach language use real words

Body language includes the voice. Kawachi (2003) found that the enthusiasm, friendliness, humor, dynamism and charisma of an online tutor had a direct impact on learning. The same has been found in classrooms (Pintrich & Schunk, 1996; Stipek, 1988). Huston and Wright (1989) found that for television, female voices and voices that are peculiar are important for sustaining the attention of young viewers.

Research into student/teacher interactions in school has determined that the way an instructor speaks to students plays a powerful role not only in learning, but also in building learners' self-esteem and self-efficacy for certain tasks (Stanulis & Manning, 2002). Self-esteem and self-efficacy are vital to a child's literacy learning. We can conclude that providing charismatic characters who speak directly to the at-home learner can pass on vital information and therefore are a key ingredient in an educational television programming for kids.

- Ensure teaching characters are enthusiastic, friendly, & dynamic
- Use female voices and peculiar voices to guide attention



Meaningful Situations and Experiences

As was mentioned earlier, for children to learn from television they must first be interested in the topic. When children are interested in what they are learning the learning is more complete, meaningful and long-term (Schiefele, 1991). In his research, Schiefele (1991) found that interested learners spent more time and effort on the process, internalized the meaning more fully, and inevitably felt better about what had been learned. Still, stimulating interest can be exceedingly difficult especially long distance and through a television set. The key seems to be setting the learning task in a situation that might be personally meaningful to the viewer.

But what makes a task meaningful to any given child? A meaningful task has personal worth and is seen as authentic. To increase the worth or authenticity of a lesson, a television program must link it to the child's world or explain why doing the task is important, what skills it is designed to teach (Stipek, 1988). According to Blumenfeld (1992), the meaningfulness of a task may derive from a collection of variables: it could draw on a learner's prior knowledge or experience; it could teach skills important to future life beyond school; or it could challenge a learner and therefore activate his desire for mastery. Fantastic or exotic locations may attract viewer's attention but children prefer routine activities and places or activities they recognize (e.g., playing in the kitchen, naptime, eating a meal) rather than a journey to a mystical land. This familiarity facilitates learning. Ultimately, the most meaningful and intrinsically motivating activities are those that keep these qualities in mind.

- Activate prior knowledge by showing things you've shown before
- Embed learning in everyday familiar routines
- Make locations one with which a child would be familiar
- Make the viewer aware of what they are learning

Linking a new task to a child's prior knowledge may be the most readily available of all meaningful-task strategies. As children master a task the instructor can make them aware of this newly acquired knowledge thereby increasing their self-efficacy for that task in the future. If a television program links a new lesson with a lesson the child has already mastered (prior knowledge gained from earlier in the episode perhaps), that child's self-efficacy for the lesson will increase, as will his interest, and the likelihood that he will be motivated to give the lesson a try (Bandura, 1993).

Even when a task has been linked to prior knowledge learners still may not consider it meaningful. An important next step to increasing a child's interest in a task may be linking the task to the child's real life (Blumenfeld, 1992). We all remember times in school when we thought, "Why do I need to know this?" quickly followed by a tuning out of the lesson. For interest to be activated not only should the task be important but the learner should be made aware of this importance. To maintain interest, it is necessary for the onscreen character to highlight for learners the link between the lesson and real life (Stipek, 1988). Both Kawachi (2003) and Malone (1981) have found that outlining clearly what the outcome will mean (what they would be able to do, or do better, as a result of mastering a task) will reinforce the task's meaningfulness and result in persistence when the going gets tough.

- Link the learning to real life situations
- Link the learning to everyday routines
- Link the learning to its purpose or usefulness



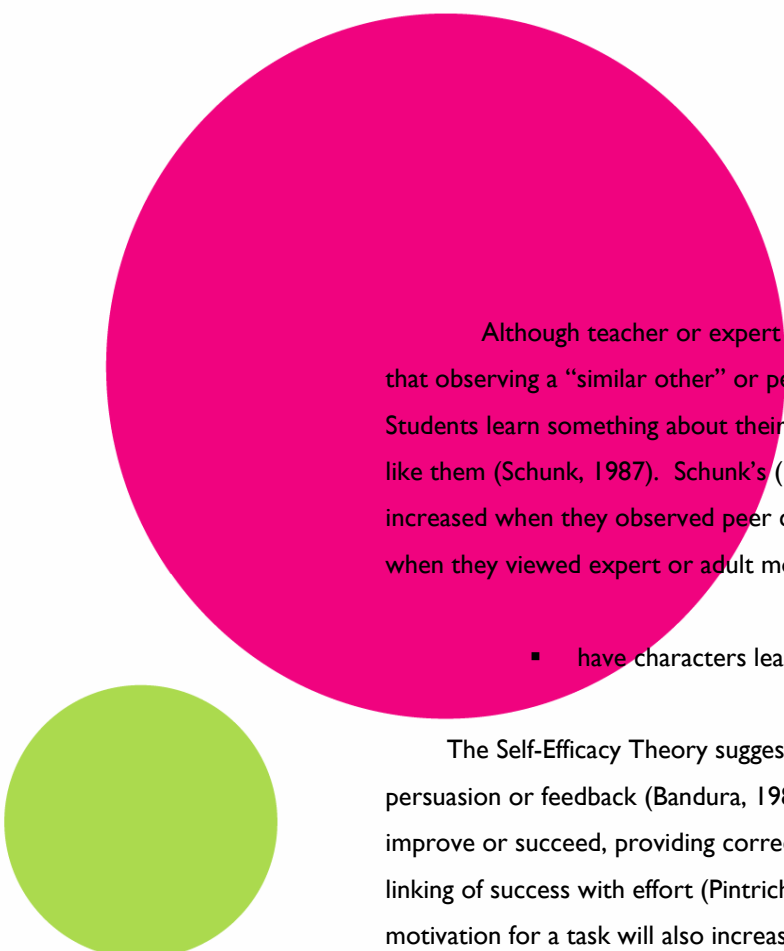
Learning Along with the Viewer

So much can be learned through the observation of others! Bandura (1994), suggests this “learning through watching” may be a key ingredient in a child’s development. According to his Social Cognitive Theory, Bandura posits that children make sense of the behaviors they view by selectively attending to different elements being modelled. They interpret and evaluate the actions they see based on experiences they have had and then store this interpretation for their own use in future.

Early research found that children can learn just as easily from viewing a live person as they can from viewing someone on screen (Bandura, 1965) and the imitation of on-screen characters that can be seen in every day life (e.g., Bart Simpson’s slang, or Jennifer Aniston’s hairstyles) suggest this is still true today. So, for an educational television program, the use of role models is a teaching strategy that can be easily incorporated into a show’s content. Characters who act out the desired behavior provide viewers an opportunity to see others succeed. This is especially useful when viewers see themselves reflected in that character. Hoffner (1996) suggests it is “wishful identification” with the characters one sees on screen that make these characters appealing as role models and likely increases the ability of these characters to instruct - boys identifying particularly with male characters, girls with female. This observation of a “same as me” character can convey to children that they too are capable of succeeding and may motivate them to attempt the task themselves (Pintrich, 1996; Schunk, 1987). Therefore, for role models to be successful, it is important to offer a diverse set of them.

Modelling could take many forms, including demonstrations by expert models (adults who show how the task is done), peer mastery models (children who try and succeed at the task), and peer coping models (children who struggle but ultimately complete the task showing that mastering the task takes time, effort and practice). Coping models offer the learner an awareness of learning differences from child to child. They also show learning and ability as incremental skills. Understanding that she is not expected to be able to be successful on her first try will support the child’s interest in attempting a task (Schunk, 1987).

- offer characters who are diverse in gender & ethnicity
- offer characters who are different in levels of ability



Although teacher or expert modelling is highly effective, the research suggests that observing a “similar other” or peer model offers the best basis for comparison. Students learn something about their own ability from knowledge of the abilities of others like them (Schunk, 1987). Schunk’s (1987) research found that learners’ efficacy was increased when they observed peer coping models and peer mastery models more than when they viewed expert or adult models or no models at all.

- have characters learn right along with the viewer

The Self-Efficacy Theory suggests a person’s self-efficacy is developed through verbal persuasion or feedback (Bandura, 1986). This includes: guidance and direction on how to improve or succeed, providing correction of errors and remedies to problems, and a linking of success with effort (Pintrich & Shunk, 1996). Ultimately, learners’ intrinsic motivation for a task will also increase because, with supportive feedback, they are being told outright not only that they can succeed but also how to do it (Bomia et al., 1997; Guskey, 1990).

- have characters offer supportive feed back to viewer
 - guidance and direction on how to improve
 - offer remedies to problems and link success to effort

Achieving small successes on the way to a bigger goal not only keeps a lesson interesting for child viewers, but also supports their self-efficacy for learning (Stipek, 1988). These small goals or “steps to success” are like a scaffold for the lesson. Learners must be given the opportunity to choose to use the steps and monitor the impact of each step on their progress. Ultimately they must attribute success to the use of these steps (Paris & Paris, 2001). Knowing the steps, or strategies, helps the viewer at home predict the results of their effort and ultimately the results of future attempts (Pintrich & Shunk, 1996).

- show each of the small steps to success
- attribute success to the use of the steps

Repeat the lesson

It bears repeating that the preschool and early elementary aged learner likes to hear and see things over and over again. Repetition is perhaps the most elementary of all learning strategies and is essential for permanent long-term memory of learning material (Cornford, 2002; Weinstein & Mayer, 1991). Of course from a producer's point of view, repetition in a television series can be the most easily employed device and a cost saving one as well! Repetition comes in many forms. A program can offer an exact repetition of a segment within an episode (e.g., *Teletubbies* in-tummy segments), it can repeat an item across episodes, it can repeat segments or entire programs across the broadcast week (e.g., the *Blue's Clues* format), or it can repeat a lesson in various forms within one episode (e.g., *Sesame Street's* letter of the day). Each of these methods can be successful in supporting learning.

Rice and Woodsmall (1988) found that repetitions are critical in children's ability to learn words from television. When children see something they already know or understand, they approach the repeated exposure to it with less discomfort. In her research on closed-captioning, Linebarger (2001) found exact repetition of words on screen lead to increased word recognition. Anderson and his colleagues (2000) found that repeated exposure to a program allowed for viewer's increased comprehension. However, they also determined that a substantial amount of the content has been learned after viewing the episode just one time.

Repetition also is a key element in enabling a child to transfer learning from one situation to another. Fisch (2001) suggests that presenting the same educational material in several different forms and in different contexts throughout the length of a television program might help children transfer what they have learned to new but similar situations (see also Salomon & Perkins, 1989). Anderson et al. (2000) found that multiple viewing of the same episode of *Blue's Clues* significantly increased transfer. Children in their study who watched an episode five times were more likely to use the strategies they observed during the *Blue's Clues* episode when they were presented with new problems than were children who had not seen the episode multiple times.

- say it, say it again... say it one more time
- show it, show it again... show it one more time

- Take advantage of the various forms of repetition:
 - Exact repetition within an episode
 - Exact repetition between episodes
 - Exact repetition of an episode
 - Same lesson different format within and between episodes

From repetition a child can move on to elaboration, which involves building in what he already knows, relating things he learns to that which he already understands, or summarizing what he has discovered in order to make it a more manageable size.

All of these learning strategies lead to deeper and longer-term learning (Bransford, Brown & Cocking, 1999, p.87).

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