

**KERA**  
**Educational Resource Center**

**A Summary of Research and Findings Related to the Effectiveness of Educational  
Television on Student Learning**

**1. A Six-Week Study of Student Performance related to Classroom ITV vs. Non-Classroom ITV was conducted by Columbia University.<sup>1</sup>**

A study was conducted by Teachers College at Columbia University and WNET Thirteen's staff to examine the impact of Instructional Television (ITV) on student's learning over a six-week period. Pretests scores confirmed there were no significant differences in the intelligences and achievement levels of the three test classes.

- ✍✍ITV students out performed (Non) ITV students on tests. Gains were 4 times as large as Non-ITV students.
- ✍✍ITV students scored higher on writing assignments. They surpassed their Non-ITV counterparts considerably.
- ✍✍ITV students used more figurative language than Non-ITV students.
- ✍✍ITV students applied more varied and creative approaches to problem solving.
- ✍✍ITV students were more active in classroom discussions.
- ✍✍ITV students learned better when more ITV is used. The study supports the extent to which ITV is used in the classroom and ITV has a direct influence on student learning.

**2. The Children's Television Workshop (CTW) conducted a series of studies that focused on comprehension, appeal, impact on scientific interest, and appropriateness of materials. Over 600 children in 24 fourth and sixth grade classrooms were included in the study. The study concluded the following:**

- ✍✍"Children understood and remembered information presented on the show and demonstrated not only the ability to recall facts, but also [demonstrated] an improved ability to answered open ended questions on related topics."<sup>2</sup>
- ✍✍"Children enjoyed the shows and demonstrated some increased degree of interest in science after watching"<sup>3</sup>.

**3. A study commissioned by the National Science Foundation to determine how 4,510 children, ages ranging from 8-12 and 4-7 and their parents would respond to instructional television and Ready to Learn programming found:**

- ✍✍61% of the children reported doing something related to science after watching science related programming.
- ✍✍65% of the children reported that they themselves made the decision to watch the series at home.
- ✍✍In general, children perceived scientists as positive role models agreeing that they work hard and do interesting things.

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<sup>1</sup> The Power of Television To Educate, Children's Television Workshop, April 1990

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

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4. Researchers in Corpus Christi worked with 48 fifth grade students. They found:
- ☞☞“Viewers’ **problem solving performance improved** after consistent exposure to the programming regardless of gender, ethnicity or socioeconomic status.”<sup>4</sup>
  - ☞☞Viewers’ **mathematical performance improved**: solutions were more mathematically complete and sophisticated.<sup>5</sup>
5. Another study conducted by Children’s Television Workshop using the SQUARE ONE TV series concluded:
- ☞☞“In general, the show appeals to both sexes. When differences do occur, **girls find the show more appealing than do boys**. This is particularly **important because girls usually lag behind boys in mathematics**.”<sup>6</sup>
  - ☞☞“Children understood and **remembered the mathematical information** on SQUARE ONE TV, and in most cases, **were able to apply it to new problems**.”<sup>7</sup>
6. A second study **examined comprehension of selected problem-solving skills** among 140 third to sixth-grade students. **Three levels of increasing difficulty** were **assessed: recall, understanding, and extension**. The findings included:
- ☞☞“Even the youngest children **were able to recall important problem solving information**, answering approximately 80% of the recall questions correctly. Performance increased with age, reaching 90% for sixth graders.”<sup>8</sup>
  - ☞☞“Third graders gave satisfactory answers to 65% of the questions aimed at assessing their understanding of segments’ underlying mathematical and problem-solving content. This **is significant, because some of the material presented in the segments had not been covered in their math classes**. Again, performance increased with age, with sixth graders answering more than 80% satisfactorily.”
  - ☞☞“Children were able to **extend the problem-solving principals** presented to **new situations**. In some cases, they employed the same procedures presented by the characters in the segments.”

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<sup>4</sup> Ibid.

<sup>5</sup> Ibid.

<sup>6</sup> Ibid.

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

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7. A review of the **findings of three major teacher surveys** conducted by TV ONTARIO and the Corporation for Public Broadcasting published in 1995 found:

☞☞[The results] “clearly indicate that teachers who use educational television acknowledged and welcome its benefits. Of teacher television users, 90% in Ontario and 91% in the United States find that television is helpful and has a positive impact on education. Of the CPB survey sample, over 83% of users found that television helps teach more effectively.”<sup>9</sup>

☞☞In the TVONTARIO survey sample, **over 90% of the teachers** who used educational television **agree** that the programs:

- helped students learn new information
- sparked student interest
- helped students understand concepts
- encouraged classroom discussion

8. A study was conducted in Mississippi **comparing** the differences between **students in 170 schools with the highest use of instructional television** and students in 35 schools **with the lowest use of instructional television**.

“The purpose of the research was to **ascertain whether schools with the highest possible usage of ITV had a higher student achievement** on the state’s accountability testing program than did schools which had the lowest ITV utilization.”<sup>10</sup> The study found:

☞☞“**Significant mean differences favoring high ITV utilization schools were found for reading, vocabulary, spelling, mathematical concepts and applications** and battery total **on the California Achievement Test**. A regression analysis of the data also showed that no linear relationships existed between utilizations and wealth or between utilization and total enrollment. ITV usage is not dependent upon the size of the school district or upon per pupil [dollar] expenditure.”<sup>11</sup>

9. A study conducted in twenty Mississippi school districts, using a sample of 2,200 fourth grade students, **examined the relationship between student learning and the utilization of structured versus unstructured use of ITV**. Both large and small school districts were used. Reading achievement from the **California Achievement Test** was

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<sup>9</sup> TELEVISION AND VIDEO IN THE CLASSROOM: A review of survey findings, Janet Stern, TVONTARIO & the Ontario Educational Communications Authority, August 1995.

<sup>10</sup> The Relationship of ITV Usage to School Achievement, Bob N. Cage, Ph. D., University of Mississippi, 1983

<sup>11</sup> Ibid.

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used as the criterion variable. **The finding was a statistically significant** and positive result showing that structured television-viewing students had a significant relationship with reading achievement among fourth-grade students.<sup>12</sup> **Teacher training on how to correctly use ITV resulted in increased student learning.**

10. An independent study of more than 500 students in five US cities examined the impact of *The Eddie Files*, a series of classroom television programs for elementary students, on the attitude toward mathematics.<sup>13</sup> **Pretest and posttest data were collected.**

The pretest interviews revealed the following:

- ✍✍ Student's interest in mathematics and math-related jobs declined throughout the elementary grades.
- ✍✍ Nine of ten students described math as "boring".
- ✍✍ Only one in ten of the jobs in which they expressed interest involved mathematics.
- ✍✍ Twice as many students expressed interest in careers in sports and entertainment as in careers that used mathematics and science.

After students viewed episodes for *The Eddie Files* and completed lessons from the teacher's guide for the series over a period of two months the following was noted:

- ✍✍ Six in ten students reported that they were more interested in learning mathematics.
- ✍✍ Seventy-five percent stated that mathematics was not "boring".
- ✍✍ The number of students who said that they would like to have a job that uses math increased by 14%.
- ✍✍ Students were better able to define concepts covered in the episodes, more likely to give "correct" answers to content-related questions and better able to list applications of the curriculum topics, which had been addressed.

Response from the teachers was similarly positive:

- ✍✍ Sixteen out of twenty rated the series as "**very effective**" in training students awareness of **careers that require math knowledge.**

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<sup>12</sup> The Study of the Relationship Between Structured and Non-structured Television Viewing and Reading Achievement Among Fourth-Grade Students. Jerry Elton Sharp, Ed. D, University of Southern Mississippi, 1982.

<sup>13</sup> FASE Research Report-Classroom Television: A useful resource for Mathematics and Science Education. Evaluation of The Eddie Files. Racquel Skolnik, FASE Sr. Research Associate 1996.

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- ✂✂Eighteen out of twenty rated the series “**very effective**” in engaging student interest, with most commenting that *The Eddie Files* helped students **overcome stereotyped beliefs by presenting women and minorities doing non-stereotypical jobs**.
- ✂✂Fourteen out of twenty thought *The Eddie Files* could **help them teach science**.
- ✂✂Nineteen out of twenty expressed a desire to acquire and use additional episodes of the series.

11. A study of classroom use of the FUTURES ITV series **showed a long lasting effect on student attitude toward careers in math and science**. African-American students’ interest in a career in engineering went from 29% to 58%, and **Hispanic students** interest in a career in architecture went from 28% to 65% after they participated in and viewed episodes on these fields over a course of a semester.<sup>14</sup>

12. Researchers from 25 universities tracked student performance in a dozen K-12 classrooms in Nashville, TN; Cupertino, CA; and Columbus, OH. Findings from this decade-old program **clearly indicate that children do better and are absent less** often when computers, CD-ROM’s, instructional television (ITV), video, and other technologies are routinely available. The improvements are significant:<sup>15</sup>

- ✂✂At all levels, technology **lifted scores on standardized tests by 10% to 15 %**
- ✂✂Children mastered basic skills in **reading, vocabulary, and computation 30% faster**.
- ✂✂After the introduction of technology into the teaching/learning process high school students stayed in school: **dropout rates fell from an average of 8.4% to 4.7%**.
- ✂✂In districts where only 15% of all students had pursued higher education, suddenly more that 90% went on to college.<sup>16</sup>

13. An article by Andrea Atkins reports that classroom television provided by local public broadcasting stations present a blueprint for a strong, dynamic partnership between the local public broadcasting station and local school districts to assist in applying technology to accomplish change and increased student learning.<sup>17</sup>

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<sup>14</sup> Ibid.

<sup>15</sup> TECHNOS Vol.6 NO1, page 19 Reform and Tomorrows Schools, Marvin Ceton, Spring 1997

<sup>16</sup> Ibid.

<sup>17</sup> *TV In The Classroom-Will Television as Teacher Harm our Schools Kids?*, Andrea Atkins, Better Homes and Garden Magazine, October 1990.

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**14. Other quotes of interest:**

☞☞ Keith Geiger, past president of the National Education Association noted, “ If we are going to talk about revolutionizing learning, television and computers have to be a part of that process”.<sup>18</sup>

☞☞ “You can’t see the bottom of the Aegean Sea easily from most classrooms” says Sam Gibbon, director of The Voyage of the Mimi.<sup>19</sup>

☞☞ “ITV is not a substitute for a book, but it can supplement a book,” said Dorothy Singer, PhD. Yale University Psychology Department.<sup>20</sup>

☞☞ Addressing the myth that ITV is an “old and failed technology and computers, satellites and videodiscs as the wave of the future” Milton Chen, director of education at the George Lucas Foundation noted that:

- “Instructional television has gotten lost in the rush to embrace new technologies, such as personal computers, videodiscs, [the Internet], and satellite delivered materials. Due to training [or lack of it] some educators have come to believe that one technology is superior to all others. There is a danger in....techocentrism.”<sup>21</sup>

☞☞ Mary Hatwood Futrell [former] President of the National Education Association said:

- “an ideal future classroom would be one that includes a variety of technology. Video alone isn’t enough. Computers aren’t enough, I hope to see classrooms where these technologies would complement one another.”<sup>22</sup>

**15. A survey by Kentucky Educational Television (KET) on the effectiveness and impact of their *GED on TV* program was conducted from 1975-1989. The study concluded:**

☞☞ **Nationally, of 2,100,000 students enrolled in the *GED on TV* program, 1,239,000 passed the exam after viewing the series of 43, 30-minute programs.**

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<sup>18</sup> Ibid.

<sup>19</sup> Ibid.

<sup>20</sup> Ibid.

<sup>21</sup> PBS Learning Research File, reprinted by permission of Electronic Learning magazine, 1994

<sup>22</sup> Ibid.

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✍✍ A 1990 KET follow-up survey with 779 graduates of the Kentucky *GED on TV* program found that earning a GED helped them do the following:

- enroll in college, vocational training, or other educational programs  
25.7%
- obtain a job, keep a job, or receive a promotion:  
46.4%
- increase income by \$1- \$3,000/year  
18.5%
- increase income \$3000 - \$7,000/year  
22.1%
- increased income over \$7,000/year  
11.8%

✍✍ The survey estimated **the cumulative five-year economic impact nationally** (from 1985-1989) of the *GED on TV* program at **\$12,266,100,000 in increased** income for participants.

16. A paper by Hank Payne, Ph.D., sponsored and published by the United States Distance Learning Association (USDLA), sheds some light on the impact and usefulness of distance learning:

✍✍ A study (1990-1992) of 3,398 students taking high school level Japanese "showed that the **students in the interactive television based groups had significantly higher scores** on both measures (listening and writing component test scores) than did the traditional groups."<sup>23</sup> (Burning, Landis, Hoffman, and Grosskopf; 1993)

✍✍ A study of 1,177 supervisors and managers in the US Postal Service revealed that **students enrolled in "both satellite courses had significantly higher scores on the performance test than did its traditional counterpart."**<sup>24</sup> (Whetzek, Felker and Williams; 1996)

✍✍ Payne concluded, "The weight of the evidence shows that **students in the instructional television courses learn as much, or in some cases, more than, their counterparts in traditional, face-to-face courses.**"<sup>25</sup> (p.xi, "A Review of the Literature: Interactive Video Tele-training in Distance Learning Courses)

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<sup>23</sup> "A Review of the Literature: Interactive Video Tele-training in Distance Learning Courses," Hank Payne, Ph.D., 1997

<sup>24</sup> Ibid

<sup>25</sup> Ibid

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17. A survey conducted by the Wisconsin Educational Communications Board entitled "**Instructional Television Use in Wisconsin: Summary of Findings from the 1996-97 Survey of K-12 Teachers**" found<sup>26</sup>:

- 79% of K-4 teachers used ITV
- 58% of 5-8 teachers used ITV
- 53% of 9-12 teachers used ITV

By content area, the following percentage of teachers in the indicated area use ITV for instruction in grades 5-12:

Health Education	85%
Technology Education	76%
Social Studies	74%
Science	71%
Computer Education	69%
Reading	68%
Foreign Language	67%
Art Education	64%
Language Arts	59%
Mathematics	58%
Family/Consumer Ed	56%

Teachers requested the most programming in the following areas:

- **Science**
- **Technology**
- Social Studies
- Language Arts

18. In the evaluation of the United States Department of Education Star Schools Program conducted by SERC, the following conclusions were reached<sup>27</sup>:

Nearly half of the teachers surveys said they would not have taken a Spanish course had "*Spanish for Educators*," (SFE) two, 30-hour televised courses offered to teachers, not been available to them.

The majority of course participants (84%) indicated they had the opportunity to employ the skills learned in SFE in their schools.

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<sup>26</sup> "Instructional Television Use in Wisconsin: Summary of Findings from the 1996-97 Survey of K-12 Teachers," Wisconsin Educational Communications Board, 1997

<sup>27</sup> "SERC: The Next Generation Evaluation Report Year Three: 1999-2000," Hazel Associates, 2000

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✍✍79%, nearly four out of five, indicated that the television course was "very useful" for teachers.

✍✍84% of the respondents indicated it was convenient to have the course available by video.

✍✍The report concluded, "Educators reported that because of SFE, they are able to communicate more effectively with students and teachers."