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PUBLICATIONS

Frog Publications
Classroom Learning Games™

Research Report

Research Report
Frog Publications
Frog System Learning Games™

No Child Left Behind Act

From 1997 to the present, Frog System Learning Games have been used by *every* school adopting the HOSTS (Helping One Child To Succeed) Learning Program which is **specifically named in the No Child Left Behind Act as an example of an effective program.**

In meetings in Washington D. C. in 2003, 2004, and 2005, Federal Department of Education leaders advised Frog Publications Vice-President and other representatives of the Association of Educational Publishers that secondary research IS ACCEPTABLE for programs using materials whose primary research has not yet been completed. DOE leaders at that meeting also said that the Federal Department of Education has NOT refused funding under the No Child Left Behind Act in any such cases.

In accordance with the information given in that meeting with the Federal Department of Education, we are providing, as specified, this report of secondary research. It is the supporting foundation for our primary research underway in conjunction with university staff.

Secondary Research Summary
Introduction

Frog System Learning Games (FSLG) are research-based supplementary materials which provide reinforced practice to mastery (overlearning). All FSLG use identical directions and procedures which are derived from research-proven learning principles such as those included in this report. Each FSLG focuses on one academic skill selected from the skills most commonly taught and tested at each grade level.

Reinforcers in FSLG: Some reinforcers are presented in FSLG only when the student gives the correct answer or exhibits appropriate behavior. Other reinforcers are constantly present when using FSLG. Primary reinforcers (color, hands-on, fun, participation with others, social approval, feelings of competence) and secondary reinforcers (immediate feedback, advancing spaces in a game) are all part of the FSLG program.

Rules and Procedures in FSLG: The rules for all FSLG are based on principles of behaviorism. Research has validated the effectiveness of each of the procedures used with the games. The FSLG rules and procedures bring a body of proven learning principles together in one supplementary system to promote academic skill mastery, positive attitudes, and social skills as indicated by the research studies cited in this report.

The research basis for FSLG is a solid body of research that begins in 1957 and continues to the present.   The foundations of FFP are evidenced in these general areas:
        (1) Applied Behavior Analysis/Behavior Modification/Behaviorism,
        (2) The Active Role of the Learner in the Learning Process,
        (3) Cognitive Psychology, and
        (4) Motivation.

Specific Research Findings, Citations, Applications

Research Finding: Increased frequency of tests and quizzes can reduce test anxiety.
Research Citation: Everson, Tobias, Hartman, & Gourgey, 1991; Pintrich & Schunk, 1996
Research Application: Every FSLG is a quiz on a gameboard, linking the pressure of a test with the fun of a game.

Research Finding: Reinforced behaviors increase in frequency.
Research Citation: Alberto & Troutman, 1995; Skinner, 1957
Research Application: As students play FSLG, reinforcement is presented visually (as the card is turned over) and verbally (by the partner) for each correct answer. The student may move ahead on the gameboard after answering correctly, seeing the correct answer, and having it verified verbally by his partner.

Research Finding: Intermittently reinforced behaviors persist longer than those that are continuously reinforced.
Research Citation: Alberto & Troutman, 1995; Skinner, 1957
Research Application: A variable response schedule is used to intermittently provide reinforcers such as larger moves, extra turns, and shortcuts following correct responses.

Research Finding: The expectation of being called on results in better preparation, greater retention of information, and greater confidence.
Research Citation: McDougall & Granby, 1996
Research Application: Students playing FSLG are called on to answer 50% of the questions and to check the answers of the other 50%.

Research Finding: Feedback that is immediate, specific, and provides corrective information for learners is effective in promoting learning and increasing motivation.
Research Citation: Clifford, 1990
Research Application: FSLG feedback is immediate, specific and corrective. Three kinds of feedback are available as part of each turn in every FSLG: First, the student SEES the correct answer. Second, the student simultaneously HEARS the partner give a brief positive reinforcer. (An important FSLG rule requires that the partner say "Good," "That's right," "You got it," "Awesome," or some other positive phrase when checking the partner's answer and finding it correct.) Third, the student MOVES ahead the number of spaces indicated. If an answer is incorrect, a FSLG rule specifies that the partner say, "That's OK, you'll get it right the next time." Then the student figures it out, memorizes it, or asks the partner for help. Those corrective actions make it very likely that he will get the right answer the next time.

Research Finding: Premack Principle: A more preferred activity can be used as a positive reinforcer for a less preferred activity.
Research Citation: Premack, 1965
Research Application: FSLG are used as reinforcers for completion of regular classroom assignments. Students not only do more classroom assignments and do them faster in order to get to play the FSLG, they also continue academic learning even as they are playing the games.

Research Finding: Feedback, or information about the accuracy or appropriateness of a response, has been consistently linked to student learning. Feedback results in learning when it is immediate, specific, and provides corrective information.
Research Citation: Weinert & Helmke, 1995
Research Application: Immediate feedback is given following each student response. The specific correct answer is shown to the student following his response. His partner verifies the match or says, "You'll get it right the next time." Corrective information is available for every wrong response through three means (figure it out, memorize it, or discuss it with your partner).

Research Finding: Feedback that has a positive emotional tone promotes learning.
Research Citation: Brophy & Good, 1986; Murphy, Weil & McGreal, 1986
Research Application: The FSLG feedback has a positive emotional tone. The rules and procedures include having the partners give positive responses to correct answers: The partner uses a positive phrase (great, super, you got it, that's right) then tells how many spaces to move ahead. When an incorrect answer is given, a FSLG rule dictates a specific positive response for each partner. These positive behaviors replace common negative comments and behaviors that can occur in classrooms where there is no FSLG rule to guide behavior when a mistake is made. (One partner is to say only the following, "That's OK, you'll get it right the next time." The other student then reexamines the missed question,

studying it to figure out why the correct answer is correct. He may also ask his partner to help him understand it. Then the card is placed back into the middle of the stack. Because students know the card will come up again before the game is over, they are motivated to follow the procedure so they will get it right when it reappears.

Research Finding: Worked examples with discussion/explanation makes the learning experience especially meaningful for students.
Research Citation: Chi, Bassok, Lewis, Reimann, & Glaser, 1989
Research Application: FSLG include worked examples with discussion/explanation. As each game question is read and answered, students explain their answers. When a question is missed, the student who missed it figures out why the correct answer is correct or asks his partner to help explain the missed question so it can be answered correctly when it reappears later in the game.

Research Finding: Students who are threatened by potential embarrassment or who work in an otherwise unsafe and disorderly environment are less motivated to learn and achieve than those whose learning situations are safe and stable.
Research Citation: Blumenfeld, 1992; Brophy & Good, 1986; McCombs, 1998
Research Application: The FSLG rules and procedures promote an emotionally safe, orderly and predictable environment for learning in three ways: First, the FSLG rules are the same for all the games at all the levels and for all the skills, that is, students know that the rules will not change. They know exactly what is expected of them. Second, students know that success is within their grasp (if the teacher has placed them in the right level) and they will not be embarrassed. They know that they will be able to do what is expected of them. Third, FSLG rules are often referred to as Frog *Courtesy* Rules, because almost every rule specifies how to behave courteously while using the gamecards and gameboards to practice and master skills. This further contributes to an emotionally stable and safe atmosphere.

Research Finding: Hands-on activities and variety promote learner interest.
Research Citation: Zahorik, 1996
Research Application: FSLG provide hands-on activity and variety. The FSLG training video (free to educators) demonstrates five different ways that FSLG provide variety to assure continued student interest: 1. Twenty-five different skill games from which the teacher or students may choose are included in each FSLG set. 2. Each skill game can be played on all ten different gameboards in the FSLG set. That means there are 250 different game combinations in each set, all using the same rules. 3. Each skill game may be used in three different ways: as a partner game, as an independent study activity, and as a small group speed drill. 4. Students may work with different kinds of FSLG sets (reading, math, social studies, language, heroes, critical thinking) at the same time. 5. Finally, students may use FSLG with ANY partner–even one who reads at a different level, is studying a different subject, or is reading in Spanish rather than English! With FSLG, only the rules and procedures never change.

Research Finding: Group work can promote motivation.
Research Citation: Baron, 1998; West, 1997
Research Application: Two methods of using FSLG involve group work: The main method consists of partner practice where two students cooperate to master either the same skill or different skills at different levels by playing a self-checking game together. As they play, they reinforce each other for correct responses, help each other learn from mistakes, and practice courteous interaction. A second FSLG method is a small group speed drill: The group accumulates points as the students simultaneously respond to as many Frog Gamecards as possible. Each day the group strives to beat its old point record.

Research Finding: Learning increases if the amount of time during which students are on-task increases within the allocated time. (Allocated time is the *entire* amount of time designated for a content area or topic, including time used for getting seated, taking roll, handling discipline problems, distributing or collecting materials, waiting, and other nonacademic activities.)
Research Citation: Nystrand & Gamoran, 1989
Research Application: Using the FSLG increases the amount of on-task time by using consistent rules and by reducing or eliminating non-learning activities. FSLG rules are simple and consistent throughout all the games at all the levels, so less time is needed to get started and more time is available for students to be involved in actively playing the learning games. The teacher can use hundreds of different FSLG without devoting a single extra minute to teaching game rules because the students already know the rules after playing the first game. FSLG eliminate non-learning activities such as dealing or picking cards, rolling dice, spinning spinners, and arguing; They include creative simple procedures to eliminate these time-wasters. Most FSLG time is spent reading and responding to academic questions.

Research Finding: Learning increases as the time increases during which students *are successfully* involved in their task.
Research Citation: Nystrand & Gamoran, 1989
Research Application: Students placed correctly and following FSLG procedures are successful both in responding to questions and in interacting with other students. FSLG are used following instruction which prepares the student for success. The variety of FSLG levels allow student placement at the level where he achieves at least 80% success. As the rate nears 100% correct, the student can begin working with the FSLG materials at the next level.

Research Finding: Intrinsic motivation is stimulated by tasks the learner perceives to be of optimal novelty, optimal difficulty, and providing personal choice and control.
Research Citation: American Psychological Association Board of Educational Affairs, 1995
Research Application: The wide variety of levels and types of FSLG provides tasks of optimal novelty and difficulty. The structure of FSLG allows the student to express personal choice among numerous factors: Learners may choose gameboard theme, subject, skill, skill level, partner, and whether to play alone or with others. They may play at their own speed, and they have the option of studying the cards or not before they play.

Research Finding: Increase of student engagement results in improved student achievement.
Research Citation: Wang, Haertel, & Walberg, 1993
Research Application: FSLG are more engaging than many other supplementary independent materials because students perceive them as "fun games" instead of "work to do." To further engage students, colorful FSLG are filled with variety and surprises such as winning extra turns (and getting to do more work) or landing on shortcuts which provide extra reinforcement for correct responses.

Research Finding: The cornerstone of an effective classroom management system is a well-conceived and administered set of procedures and rules. Effective classroom management increases achievement and motivation and is a key characteristic of an effective school.
Research Citation: Emmer, Evertson, Clements, & Worsham, 1994; Evertson, Emmer, Clements, & Worsham, 1997; Radd, 1998; Purkey & Smith, 1983
Research Application: FSLG have a well-conceived, simple set of procedures and rules that are easy to administer because they are simple, clear, and never change.

Research Finding: Facility with procedural skills (such as adding two-digit numbers, applying phonics skills to decoding words, using correct punctuation and grammar, converting fractions to decimals, etc.) is developed through practice.
Research Citation: Doyle, 1983
Research Application: FSLG offer practice of procedural skills in reading, language, math and other subjects.

Research Finding: Learning is influenced by social interactions, interpersonal relations, and communication with others.
Research Citation: Presidential Task Force on Psychology in Education, 1993
Research Application: FSLG promote positive interactions and communication to result in positive learning outcomes. FSLG create social learning activities in which students can participate independently, without disrupting the teacher's efforts with the other students in the classroom.

Research Finding: Cooperative learning methods have been effective in increasing achievement at all grade levels.
Research Citation: Johnson & Johnson, 1989; Cohen, 1994; O'Donnell & Dansereau, 1992; Quin, Johnson, & Johnson 1995; Slavin, 1995
Research Application: FSLG provide an easy structure for cooperative learning in the classroom.

Research Finding: Cooperative learning methods can improve social skills, foster the acceptance of mainstreamed students, and promote friendships and positive attitudes among students who differ in achievement, ethnicity, and gender.
Research Citation: Slavin, 1995
Research Application: FSLG provide an easy structure of cooperative learning games in the classroom making it convenient for the teacher to use this cooperative learning tool.

Research Finding: Learners differ in the amount of time and practice needed to master a topic.
Research Citation: Slavin, 1987
Research Application: Students play a specific FSLG just a few times or again and again–depending on their different needs for repetition and practice for mastery. "Playing" FSLG is intrinsically fun so students play repeatedly. If they need many repetitions, using a different gameboard each time maintains interest and variety.

Research Finding: Effective drill and practice programs allow students as much time as needed to answer and study the feedback.
Research Citation: Roblyer, Edwards, & Havriluk, 1997
Research Application: Every FSLG gives students as much time as needed to answer and study the feedback.

Research Finding: Effective drill and practice programs provide brief, attractive, positive feedback for correct answers.
Research Citation: Roblyer, Edwards, & Havriluk, 1997
Research Application: Every FSLG gives students brief, attractive, positive feedback for correct answers in three ways: They SEE it, they HEAR it, and they MOVE ahead each time they give a correct answer.

Research Finding: Effective drill and practice programs provide more interesting and attractive feedback for correct answers than for incorrect answers.
Research Citation: Roblyer, Edwards, & Havriluk, 1997
Research Application: Every FSLG gives students more interesting and attractive feedback for correct answers than for incorrect answers. Seeing that the correct answer printed on the card matches mine, hearing my partner say "Terrific!" and moving ahead on the gameboard is much more interesting and attractive than seeing that the answer on the card does not match mine, hearing my partner say, "That's OK, you'll get it right next time," then studying the card again and staying in the same place on the gameboard.

Research Finding: Both low-level questions (such as knowledge of Bloom's Taxonomy) and high-level questions (such as application and drawing conclusions) correlate positively with achievement. When the goal is automaticity with basic skills, low-level (knowledge) questions may be most effective.
Research Citation: Good & Brophy, 1997
Research Application: FSLG provide an abundance of knowledge questions and many application questions too, depending on the level and the subject of the FSLG set.

Research Finding: Properly designed drill and practice activities have three advantages over traditional paper and pencil exercises. First, they provide immediate feedback. Second, they can be motivating. Third, they save teachers' time because students can be working on them while teachers attend to other students' needs.
Research Citation: Roblyer, Edwards, & Havriluk, 1997
Research Application: FSLG provide immediate feedback, are motivating, and save teachers' time.

Research Finding: Practice with the content and format of test questions increases achievement on tests, especially for students of low ability, young children, and minority students.
Research Citation: Carrier & Titus, 1981; Dreisbach & Keogh, 1982
Research Application: FSLG content and format are modeled on the content and format of commonly used statewide testing programs and standardized tests.

Product Information

Frog System Learning Game Sets are published by Frog Publications, 11820 Uradco Place, Suite 105, San Anotnio, FL 33576, for a wide range of levels and subjects. All Frog System Learning Games provide self-checking skill practice in partner game format of one skill at a time for understanding, mastery, and confidence. Social skills and courtesy are part of the consistent procedures and rules for all the games. All the games have the same rules, regardless of skill, subject, or level.

Visit the website www.frog.com for ordering information and to see samples. First, on the homepage, click on the listing Frog System Games. Next, click on the name or picture of the Frog System Learning Game Set you wish to preview. Then just touch the name of any skill in the list with your cursor, and the sample card will change to that skill.

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