The Evaluation and Selection Process of Instructional Games and Toys

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The Evaluation and Selection Process
of Instructional Games and Toys
(TITLE)

BY
Linda Kay Young

THESIS
SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
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DEPARTMENT HEAD
The Evaluation and Selection Process
of Instructional Games and Toys
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Games and toys used in the classroom have been determined to be an effective means of instruction. The more teachers know about the games and toys being used in their classrooms, the more valuable these games and toys will be to their teaching and their students' learning. The main focus of this study was to gain understanding of the qualities and characteristics of instructional games and toys that will affect the cognitive, affective, and psychomotor domains of the student at the elementary level. This study examined the criteria that was considered important by "experts in the field" and validated those "expert" judgements by asking teachers to rate the importance those criteria had in their selection and evaluation process of instructional games and toys. There were significant differences on the ratings of three criteria by educators at the K-3 grade level, educators at the 4-6 grade level, and special educators K-6 grade level. There were also significant differences on the ratings of three criteria at the .05 level between regular elementary teachers as a whole (K-6) and special elementary teachers (K-6). The study concluded that research needs to be conducted on a larger scale to be able to come to any significant results.
The Evaluation and Selection Process of Educational Games and Toys

Introduction:

Currently, this nation is developing an intense interest in its educational system. However, while the overall goal of improving education is a constant, there is a disagreement as to the specific educational aims and goals and the methods for achieving those aims and goals (Curran, 1983). According to Curran (1983), the effective school is a purposeful organization whose members seek through common effort to achieve established educational goals. Schools must set meaningful and realistic goals and then use evaluation as feedback to achieve them (Hill, 1985).

Curran (1983) gives this view of the American school system, "School systems are composed of people and people will determine whether the system succeeds or stagnates, serves its people effectively or squanders its limited resources" (p. 73). Obviously there needs to be a consensus as to the evaluation process of curriculum. Consistency among schools in a district is a must and would aid tremendously in the selection of instructional materials (Curran, 1983). Ben-Peretz (1975), Border (1979) and Day (1976) all support the need for schools to be consistent within districts in their evaluation of curriculum and related materials.
Purpose of Evaluation

A good part of the disillusionment with evaluation lies in a misunderstanding of what it can and cannot do for the schools. Evaluation of curriculum cannot tell educators and administrators what to do or how to act, however, evaluation can provide information about how things are working under any number of conditions, identify strengths, pinpoint weaknesses, provide a picture of differences in perception, and offer comparative data (Talmage, 1985). To be effective, the evaluation must provide data that is useful and will assist in the decision making process of educators and administrators (Talmage, 1985). The act of evaluation involves judgement of worth and merit (Sarapin, 1981). Therefore, educational evaluation is an activity that involves ascertaining the worth and merit of educational processes and products to supply information for decision making about a particular curriculum.

Evaluation is a topic many educators find uncomfortable, confusing, and even threatening. These negative attitudes toward the process of evaluating instructional materials can be attributed to the lack of understanding the characteristics of educational evaluation (Sarapin, 1981; Ball, 1976; Broudy, 1977; Scriven, 1967; and Talmage, 1985). In order for educators to understand the process of curriculum evaluation, they must first know what to look at in a curriculum. The
personality characteristics they depict, the degree of student creativity encouraged or allowed, the social or interpersonal orientation expressed, the verbal expression they elicit and the extent to which they involve students in perceptual-motor activities are all other important considerations (Cornbleth, 1981). Therefore, it is obvious that selection appropriate instructional materials is one way to differentiate instruction to increase student achievement.

In other words, instructional materials structure the students' environment by promoting outcomes and meeting objectives (Werner, 1980). The experiential quality of materials will color the students' encounter with them. Also, it is on the basis of the students' encounters that the decision to adopt the instructional materials is made (Werner, 1980; Ball, 1976; Broudy, 1977; Cornbleth, 1981; Cunningham, 1981; Etter, 1978; Munby, 1979; Talmage, 1985; and Ward, 1968).

Selecting curriculum materials in support of instruction presents basically the same problem for every teacher. There is a great wealth of materials to choose from, few guidelines are available and the effects of errors are often long lasting and expensive (Sawin & Hartz, 1977). Cunningham (1981) uses this analogy to describe the evaluation and selection process of instructional materials: "Shopping for materials is like shopping for groceries. there are all sorts of
goodies to choose from and if you haven't thought through what you need before going to the grocery store, you will probably buy many unnecessary items and forget many of the items you need" (p. 181).

**Evaluation Methods**

In its most effective form, the selection of instructional materials involves two processes. One process involves an analysis that involves the description of forces that affect selection such as the school district's philosophy of education, the focus of the curriculum, student and teacher characteristics and the community values. The second process is a selection process with three phases. Phase one is the screening of materials. Phase two is the matching of characteristics of the screened materials to the antecedents. Finally, phase three involves the actual decision making (Talmage, 1981).

There are several evaluation guidelines available when selecting instructional materials. However, there was a time when textbooks were the only instructional materials that were evaluated. Schools selecting textbooks are usually concerned with the content and cosmetics of the books. Educators throughout the country are realizing that if instruction is to be effective, more is needed than a textbook or a set of attractively packaged materials (Ball, 1976).

Niedermeyer & Moncrief (1975) suggested the
following guidelines to use when selecting an instructional product:

1. What will be learned from a particular product?
2. How will teachers know that learning has occurred?
3. How well has the product worked in similar schools?
4. Are materials available for training teachers and their staff?

In recent years, there has been a "veritable explosion" in the range of instructional materials produced for classroom use (Croft, 1978). In order to assist educators and administrators in assessing the wide variety of instructional materials available, a comparative point evaluation is recommended by Croft (1978). Two distinct approaches have been identified as being:

1. Content analysis and,
2. Instructional design (Croft, 1978).

Content analysis is useful when selecting materials in factual curriculum areas such as science and math. Content analysis involves the comparison of the instructional materials against the course objectives. However, Croft (1978) cautioned that content analysis should be performed by a specialist in the field.

In contrast, the instructional design approach concentrates on four main aspects of the curriculum
which are:

1. educational objectives
2. the scope and sequence of materials
3. method of instruction
4. evaluation of student learning

Johnston (1974) and St. John (1984) have suggested other methods of product evaluation. Johnston advocates evaluation of instructional materials from a domain-referenced viewpoint. St. John (1984) states that the logic of product evaluation is described in a framework that is meant to be general and adaptable to all kinds of evaluations. Both of the checklists provide educators with a flow or pattern in the decision making process. These lists break down and analyze each step in the evaluation process of instructional materials.

The guidelines and checklists compiled by Johnston (1974) and St. John (1984) are general guidelines and will provide vague descriptions of instructional materials. However, there are more specific guidelines in print.

For example, the School of Library Media at Alabama A & M University has developed an instrument that details the following:

1. Goal and Objective Orientation
2. Objectivity of the Product
3. Promotion of Understanding
4. Level of Sophistication
An even more specific means of curriculum evaluation is the Annehurst Curriculum Classification System (ACCS). The ACCS is a systematic and practical means of determining student compatibility to the instructional materials. There are ten dimensions of the ACCS:

1. Experience
2. Intelligence
3. Motivation
4. Sociability
5. Verbal Expression
6. Auditory Perception
7. Emotion Personality
8. Creativity
9. Visual Perception

When materials are needed for a particular student or group of students in a specific area, educators can use the ACCS to select those instructional materials that will be most compatible.

Cornbleth (1981) maintains that instructional materials are a prominent feature of classroom instruction. In order to make better use of the
materials that are already in use in the classroom and make decisions about selecting and developing future materials, the established guidelines need to be used appropriately. Croft (1978) makes the following suggestions in the selection process of instructional materials:

1. Ensure that the content of the instructional material is relevant to course objectives.
2. Make sure the questions that are asked of the instructional material is valid.
3. Have two to four people assess the materials to increase the reliability.
4. Have a basis for the decision:
   a. purchase and use without modifications
   b. purchase and modify
   c. purchase and arrange training in use
   d. don't purchase.

The concept of developing an evaluation checklist to be used for the purpose of selecting instructional materials is certainly not a new one. Several authors, Ball (1976); Borden (1979); Fetter, (1978); Manning, (1981); McLaughlin, (1976); and Teague (1978) have all developed a means of evaluating instructional materials through the use of checklists. These checklists contain criteria that are similar in nature. As research can be concluded through the development of instructional material evaluations has many sources. Werner (1980)
noted the broad tradition of documentary criticisms, the various specialized disciplines provide rich and provocative starting points for effective evaluations of instructional materials.

Educators need to be aware that there is no quick and easy way to select materials for use in the classroom. Instructional materials play such a prominent role in instruction and are integral to good instruction, thus the selection is crucial (Croft, 1978), Broudy (1977), Cornbleth (1981), Day (1976), Kandaswamy (1980), Macbeth (1974).

**Responsibility of Evaluations**

Who should accept the responsibility of evaluating and selecting instructional materials must be addressed. In the past, the burden of the task was placed on the school board. School board members are not usually professionals in the educational sense (Worner, 1974), Werner (1980), Hill (1985), Commor (1985). Macbeth (1974) has other views as to the responsibility of evaluation instructional materials. He feels that the curriculum product industry should play a major role in setting standards for quality control of instructional materials. The justification that Macbeth (1974) gives for the contention that the curriculum product industry needs a set of criteria for quality control can be found in testimony given in 1971 before a congressional subcommittee. The testimony indicated that "less than
1% of the approximate 200,000 curriculum materials on the market at that time had been tested before being offered for sale to the public" (Macbeth, 1974, p. 39). Many of the newer curriculum programs are composed of multimedia materials, therefore, it is imperative to have a means to evaluate the purchase of programs to assure that durable components are being used, initial costs are reasonable, and replacement costs are minimal (Macbeth, 1974).

Macbeth (1974) seems to sum it all up when he says, "Experience has affirmed that the failure of many new and otherwise promising programs can be traced to the lack of participation and involvement on the part of administrators, the public and teachers during the process of curriculum review adoption, and evaluation. Likewise, it is the failure of curriculum producers to establish quality controls within their own industry that will hurt public education to an extent that is difficult to measure precisely but easy to ascertain in isolated situations" (p. 42).

The most obvious population who should accept the responsibility of evaluating and selecting instructional materials is the classroom teacher. According to Cunningham (1981), years ago, a teacher could pretty much do whatever he/she believed was good for students. Today, however, a teacher's intuitive feel for what is right is not enough (Cunningham, 1981). According to
Evaluation

Cunningham (1981), teachers must not only know what is right, they must be able to explain why it is right and what it is accomplishing. Also, they must be able to teach in a manner that is clearly working and be able to articulate why they are doing what they are doing. Otherwise, someone outside the classroom may impose systems on teachers which may not work as well but which will be clearly defined (Cunningham, 1981).

The teacher, as a source of evaluation information, observes events as they occur in the process of utilizing the instructional material as an intervention (McLaughlin & Trlica, 1976). If the teacher is not utilized in the evaluation and selection process of instructional materials, they may result in increased "cookbook" use of materials (McLaughlin & Trlica, 1976).

The primary reason for evaluation is to provide data for the decision maker. In the majority of cases it is the teacher who is the decision maker. Therefore, it would seem appropriate to include this individual in the evaluation and selection process (McLaughlin, 1976). Similar endorsement for the inclusion of teachers in the evaluation process of instructional materials is given by Grobman (1976), Lehrer (1973) and Meyen (1969).

According to Scriven (1967), it is inappropriate to evaluate curriculum materials without including the teacher. The inclusion of teachers as part of the evaluating team should most certainly occur in the
formative stages of evaluation. Likewise, Nelson (1973) points out another need for teacher-based evaluation in an effort to generate information which aids the teacher in managing her instructional objectives. There is evidence that teachers have more faith in material evaluation information which is generated from teacher-based evaluations. Baum (1972), in a survey of potential requestors of evaluative information, found that they have more positive attitudes towards evaluations by colleagues than by nonteaching personnel or professional evaluators.

Therefore, in order to effectively evaluate and select instructional materials, the teacher's major task should be planning. Instructional objectives of the curriculum needs to be defined. Then the teacher can determine precisely what need to be taught and what the desired learning outcomes will be. The more effectively the instructional objectives are written, the easier it will be to select instructional materials to meet those objectives (Sawin & Hartz, 1977).

Teacher involvement in the evaluation and selection of instructional materials is a trend that dates back to the late 1960's and the rise of teacher militancy, the strengthening of teacher organizations and unions (Broudy, 1977). Unfortunately, time pressure forces many teachers to make decisions based on catalog descriptions alone. Other factors, according to Broudy
Evaluation

(1977) are the abuse of selection and evaluation aids such as checklists of objective criteria. The checklist may be used by the teacher but his/her selection will not be made based on the data provided from the checklist. How the criteria are applied counts as much as what the criteria are. Broudy (1977) provides the following suggestions for teachers to help them become better instructional materials shoppers:

1. Make use of your resource teachers.
2. Write to publishers for consultant services.
3. Go to professional meetings and workshops.
4. Check with the nearest curriculum library for available materials.
5. Use criteria checklists prudently.
6. As for samples.
7. Question the sales representatives.
8. Demand time to examine materials before purchasing.

It is obvious that teachers cannot merely rely on periodically reading a journal to make selections of materials. Furthermore, teachers cannot accept lists of "good" material from a supervisor or an educational media specialist as necessarily being "good" for his/her classroom. Of course, the teacher can take recommendations from journals and specialists and other sources, but he/she must realize that he/she is the person who must do the evaluation and selection for his/her individual classrooms, Splaine (1975), Broudy
The Importance of Games and Toys: Background as to the significance of games and toys in the child's environment is necessary to understand the full value of using games and toys instructionally. In the article, "Games Children Play", Maxwell (1983) sites Karl Groos (1901) who pioneered in the study of children's games. Groos wrote of the significance of play, "Observations of men and animals force us to recognize its (play) great importance in the physical and mental development of the individual; that is in short preparatory to the tasks of life" (p. 40). In addition, Maxwell (1983) quoted Adler (1927) as writing, "Games are not to be considered as haphazard ideas of parents or educators, but...as educational aids and as stimuli for the spirit, for the fantasy, and for the life-technique of the child. The preparation for the future can be seen in every game. Above all else, games are communal exercises; they enable the child to satisfy and fulfill his social feelings. Play is indivisibly connected with the soul. It (play) is so to speak a kind of profession. Therefore, it is not an insignificant matter to disturb a child in his play" (p. 40).

Maxwell (1983) also sited Bruner (1966) in his article as saying "A game is like a mathematical model, an artificial but powerful representation of reality. Games go a long way to getting children involved in
understanding language, social organization and the rest; they also introduce the idea of theory to these phenomena" (p. 40). Levine & McColoum (1983), Brehner (1977), and Eckerman & Whatley (1977) all echo the previous statements about the significance of play, games and toys in children's development.

The Use of Instructional Games and Toys in the Classroom: Nelson (1983) has established that children like to play games. For this reason, many elementary school teachers have used games and toys as a way to practice basic skills (Nelson, 1983). Toys and games offer an exciting and worthwhile diversion from everyday routine. When conditions are suitably arranged, playful activities can and do promote general and behavioral development (Schoeffler, 1982). Toys and games allow for physical and mental participation and accommodate a wide range of student abilities Tassia (1979), Ball (1976), Ensminger (1980).

Among the benefits attributed to the use of instructional games and toys are improvements in: IQ scores, attitudes, and academic achievement (Clark, 1978). Additionally, instructional games and toys not only strengthen fine and gross motor skills, but the play involved provides an outlet for social communication and promotes overall awareness (Schoeffler, 1982). Schoeffler (1982) concludes that skills which are learned during leisure can provide a
life enriching experience and assist a child in reaching his/her full potential during more structured learning.

Tassia (1979) also includes the fact that instructional games can contribute to a student's decision making ability, social interaction as well as a positive self-image. She goes on to emphasize that games motivate children to participate regardless of their intellectual abilities and they provide immediate results. Ensminger (1980), Piggins (1979), and Honig (1982) all agree with Tassia (1979) as to the importance of instructional games in the development of a child's affective domain. Clark (1978) also found that low ability students are the primary benefactors from instructional games and toys since learning rates are minimized among students during play. If any game is to be fun and educational for the student who is slower, it should include an element of chance (Nelson, 1983). At one time administrators and educators considered games and toys in the classroom to be frivolous, ornamental and meaningless artifacts that detracted from the seriousness of education (Ball, 1976).

Several reasons why games have not consistently produced outcomes superior to those of traditional teaching methods has been identified by Clark (1978). First of all, there was inadequate integration of games and toys into the class reward structure and instructional goals. Also, the introduction of games
merely as filler materials did not aid in its instructional value. Lastly, was the exclusive replacement of traditional learning methods with game strategies.

Teachers need to have realistic expectations of the effectiveness of instructional games and toys and also need to monitor closely the changes in students' growth (Bright, et al., 1983). In order to make the most of effective use of instructional games and toys, educators should discriminate carefully between maintenance games and teaching games (Nelson & Whitaker, 1983). According to Nelson & Whitaker (1983), maintenance games are games in which the child must already know the skills necessary to play. Maintenance games use only facts and require that the successful player have rapid recall of those facts. On the other hand, teaching games are designed to help the students learn the facts and skills needed. Teaching games are ways for students to learn skills through the use of concrete or pictorial models (Nelson & Whitaker, 1983). Nelson and Whitaker (1983) also stress that both types of games have a place in the elementary school curriculum. The wise teacher will choose teaching games for concept development and maintenance games for practice in retaining skills. Nelson & Whitaker (1983), Ball (1976), Zigal (1984) and Piggins (1979).
Toys: Instructional games and toys designed to teach a wide variety of skills and concepts have appeared in the educational marketplace (Etter & Watson, 1976). Etter and Watson (1976) believe that what is true of other instructional materials is true of games and toys; some are excellent and some are a waste of time. To choose games and toys that will be most effective in their particular classrooms, teachers are generally well advised to become familiar with materials before making any purchases (DeKoven, 1980). According to Etter & Watson (1976), there are many classroom situations where the use of an instructional game or toy may increase motivation and therefore further the learning process.

The process of instructional game and toy evaluation and selection is not simple and can be frustrating as well as discouraging (Caney, 1979). Educators trying to choose the right toys and games have the paradoxical responsibility of finding something that is full of fun and full of learning experiences (Caney, 1979).

The Public Action Coalition on Toys (1983), stresses that the mark of a good instructional game or toy is its ability to stimulate the imagination, skills, curiosity and promote shared activity between adults and children and among children themselves. Yet, educators frequently make mistakes when selecting games toys. The Public Action Coalition on Toys (1983) lists some
characteristics that educators should consider when purchasing instructional games and toys:

1. **SAFETY** - Children are involuntary risk takers who often cannot or do not read or understand warning instructions.

2. **APPROPRIATENESS** - Children love games and toys they can control. Such items have high learning and play value. Children who fail at playing with games and toys become frustrated and inhibited. On the other hand, if a game or toy is beneath a child's skills he or she may lose interest and this can lead to regressive or destructive play. Children benefit most from games and toys matched to their stages of development.

3. **EDUCATIONAL VALUE** - Be alert to the misuse of the label "educational". Games and toys should say to children, come along, learn, be competent, figure things out, work things out, and have fun.
DeKoven (1980) provides another general guideline for the evaluation process of instructional games and toys. Educators need to ask the following questions before purchasing:

1. Is the game or toy well made and durable?
2. Can the playing pieces be stored compactly?
3. Are the instructions understandable or will explanation of directions be necessary for the students?
4. Is the game or toy too simple or too complex for the grade level?
5. Can it be simplified or made more challenging?
6. Will too much patience be required to play the game?

Etter & Wilson (1976) provides yet another guideline for the evaluation of instructional games and toys. First of all the educator needs to look at the structure of the game and/or toy. Are there decision making opportunities for the students? Secondly, the content format needs to be examined. To what extent is the learning content of the game reflected in the format and outcome of the game? The next item to look at is the competitive satisfaction. To what extent does competition in the game offer gratification to all players? Also, how much skill rather than chance have to do with the final outcome of the game? The liveliness structure also needs to be examined by the
educator. To what extent does the game offer players opportunities for varied behaviors? Lastly, how does the game relate to the real world?

There are two major factors to be considered whenever an instructional game or toy is selected to be used in educational programming. First of all, the teacher needs to determine when the game should be used (Etter & Watson, 1976). As was mentioned by Etter Nelson and Whitaker (1983), some games are designed to serve as a vehicle for the initial learning experience. However, most instructional games are effective and appropriate when used to provide practice as opposed to being used to teach the acquisition of new skills and behaviors.

The second consideration provided by Etter and Watson (1976) is the general format used and procedure for playing the game. Some games are so physically attractive and the game process so interesting that actual content may be only of secondary interest to the students.

The best rule for evaluation and selection of instructional games and toys might be: something old, something new (Caney, 1979). Mix traditional staples with the most open ended of the latest products. Teachers may not be totally satisfied with all of their purchases, but they will not be totally disappointed either (Caney, 1979). The more teachers know about the
games and toys being used as instructional aids in their classrooms the more valuable they will be to their teaching and students' learning DeKoven (1980), Ball (1976), Broudy (1977) and Ensminger (1980).

Conclusion: The main focus of this study is to gain understanding of the qualities and characteristics of instructional games and toys that will affect the cognitive, affective, and psychomotor domains of students. The project dealt with the validation of evaluation instruments used in the selection of instructional materials, specifically games and toys. This project required educators to determine what they believe to be important criteria to take into consideration when selecting instructional games and toys for their classrooms.

(See Appendix A)
Method

Subjects

The targeted population for this study was public elementary school teachers. The teachers were employed by the Charleston School District in Charleston, Illinois. Charleston has a population of approximately 20,000 people. The schools that were involved in the study are as follows: the Diagnostic Developmental Center (center for children identified as being severely and profoundly handicapped), Lincoln Elementary School (K-4), Carl Sandburg Elementary School (K-4), Mark Twain Elementary School (K-4), and Jefferson Elementary School (K-6). Approximately 70 teachers were asked to participate in the study.

Procedure

Development of the survey. A list of criteria for choosing instructional games and toys was developed based on a review of literature. The list of criteria was organized into a survey that required the participants to rate each criteria as to its importance in the selection process of instructional games and toys.

(See Appendix B)
A pilot study was conducted with 15 Eastern Illinois University students to check for clarity of the organization and wording of the survey. The students who participated had previous teaching experience and were enrolled in an introductory class to special education. A few minor adjustments in wording were made to revise the survey.

The revised survey was then distributed to the targeted population. The administrators of each school were contacted and informed of the purpose of the study. A request for the distribution of the cover letter, explaining the purpose of the survey, and the surveys was made and consent was granted. The teachers were given five school days to complete and return the surveys to the school's office where they were to be retrieved by the researcher.
RESULTS

Descriptive Analysis

The data obtained in this study was sorted into the categories of 1 (least important), 2 (moderately important), and 3 (highly important). This data provided a means of weighing the criteria as to the importance it has in relation to the selection and evaluation process of instructional games and toys.

A total of 49 out of 70 regular and special educators at the elementary level (K-6) responded to the survey. Items that had a mean average rating of 2.5 to 3.0 were sited. A total of 14 items received a mean average rating of 3 (highly important).

Criteria that came under the category of Motivational Qualities and Features, all received a mean average rating of 2.5 or higher. Items 21-25 were considered highly important by both regular and special educators (K-6). These items are as follows:

- \( n = \) total number of respondents who gave ratings of 3.
- \( \bar{X} = \) mean average of rating

Motivational Qualities and Features

21. Does the product meet the interest level of the student? \( (n=42, \bar{X}=2.891) \)

22. Will the product be challenging to the student? \( (n=36, \bar{X}=2.533) \)

23. Is the product age appropriate? \( (n=28, \bar{X}=2.533) \)
24. Will the students be able to master the skills necessary to play? (n=37, \( \bar{X}=2.818 \))

25. Can the product be used by a wide range of students with varying degrees of skills? (n=37, \( \bar{X}=2.761 \))

Under the category of Physical Features and Qualities, 5 out of the 12 criteria obtained a mean average of 2.5 or better. These are the items considered to be important to both regular and special educators (K-6) in this category.

- n=total number of respondents who gave ratings of 3.
- \( \bar{X} \)=mean average rating

**Physical Features and Qualities**

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Physical Feature/Quality</th>
<th>n=</th>
<th>( \bar{X} )</th>
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<tbody>
<tr>
<td>2.</td>
<td>Durability of the product, (n=40, ( \bar{X}=2.867 ))</td>
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<tr>
<td>3.</td>
<td>Accuracy of the content, (n=26, ( \bar{X}=2.533 ))</td>
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<tr>
<td>4.</td>
<td>Safety, (n=34, ( \bar{X}=2.667 ))</td>
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<tr>
<td>8.</td>
<td>Complexity of the physical components, (n=32, ( \bar{X}=2.689 ))</td>
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<tr>
<td>9.</td>
<td>Complexity of the rules, (n=33, ( \bar{X}=2.652 ))</td>
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Regular and special educators at the elementary level (K-6) rated 2 out of the 6 criteria under the category of Skills in the Affective Domain highly important. They are as follows:

- n=total number of respondents who gave ratings of 3.
- \( \bar{X} \)=mean average rating

**Skills in the Affective Domain**

34. Does the product encourage creativity and stimulate
the imagination? \( (n=36, \bar{X}=2.733) \)

37. Does the product encourage cooperation and sharing skills? \( (n=33, \bar{X}=2.644) \)

The last category to receive a mean average rating of 3 was **Qualities and Features Related to Curriculum**. Regular and special educators (K-6) rated 2 out of the 9 criteria with a mean average rating of 3. These criteria are:

\[ n = \text{total number of respondents who gave ratings of 3.} \]
\[ \bar{X} = \text{mean average rating} \]

**Qualities and Features Related to Curriculum**

14. The major purpose is to maintain skills already learned. \( (n=26, \bar{X}=2.565) \)

18. Can the product be implemented into the existing curriculum? \( (n=29, \bar{X}=2.591) \)

The information provided indicates that these 14 items are considered to be important to educators (regular and special K-6) when selecting and evaluating instructional games and toys. Regular and special educators (K-6) appeared to be in agreement with the research that suggests that these 14 criteria need to be included on a checklist or evaluation guideline for instructional games and toys.

When looking at the responses of the entire group, on the opposite end of the spectrum, only 3 items were given ratings of 1 (least important). Items for which the responses resulted in a mean average rating of 1.0
to 1.5 or left blank (which meant that these items were not even considered) are as follows:

n=total number of respondent who gave ratings of 3.

$\bar{X}$=mean average rating

**Physical Features and Qualities**

**Item number**

5. Manufacturer of the product. (n=38, $\bar{X}=1.33$)

**Qualities and Features Related to Curriculum**

20. Does the product present contemporary problems, issues and concerns? (n=33, $\bar{X}=1.5$)

**Skills in the Affective Domain**

36. Does the product encourage competitiveness? (n=36, $\bar{X}=1.405$)

The educators (regular and special K-6) who were respondents to this survey, as a whole, did not agree with the research that considered these items important in the selection and evaluation process as indicated by their ratings of 1 or no response.

There were 3 subgroups among the respondents, subgroup 1 (teachers at the K-3 grade level, n=19), subgroup 2 (teachers at the 4-6 grade level, n=14) and subgroup 3 (teachers of special education K-6 grade level, n=13). Table 1 gives an overview of responses that are unique to each subgroup. The 41 criteria that appeared on the survey are listed and the table denotes the percentage of each group that gave ratings of three to each criteria.
When examining the percentage of respondents from each subgroup (K-3, 4-6 and spe. ed. K-6) who gave ratings of 3 to each criteria, it was interesting to note that many of the differences occurred between group 3 (spe. ed. K-6) and one or both of the regular education subgroups (K-3, 4-6). The next step was to determine if there were significant differences and where those differences occurred.

**Statistical Analysis**

The data was then analyzed to ascertain significant differences between subgroups: teachers at K-3 grade level, teachers at 4-6 grade level and teachers of special education K-6 level. An F-probability with a Scheffe analysis was initiated. Scheffe uses a single range value for all comparisons which is appropriate for examining all possible linear combinations of more than two groups of unequal sizes. The Scheffe is considered to be a conservative analysis of variance.

Of the 41 criteria, 3 were found to be significantly different at the .05 level, as demonstrated by an F-probability of .05 or better and a Scheffe analysis specific to where the differences lie. These criteria are items 15, 27, and 32. Tables 2, 3, and 4 provide the F-probability and mean average rating of each sub
Significant differences in responses were found between teachers at the 4-6 grade level and teachers of special education K-6 grade level. Special educators rated item 15 more highly than regular educators at the 4-6 grade level.

Once again, the significant difference occurred between teachers of special education K-6 grade level and regular educators 4-6 grade level. Special educators rate a game or toy highly if it addresses the area of auditory discrimination. Regular educators 4-6 grade level considered this item only moderately important.

Significant differences of responses occurred between special educators K-6 grade level and regular educators 4-6 grade level once more. However, regular educators (4-6) consider item 32 highly important while special educators rated this item only moderately.
important.

The data was further analyzed with a recoding of the subgroups. Subgroups 1 and 2 were combined (regular educators K-6) and subgroup 3 remained constant (special educators K-6). Recoding was done to examine whether or not regular educators (K-6) rated these criteria significantly different than special educators. The data was analyzed utilizing again, F-probability of .05 or better. The statistical analysis revealed three criteria to be significantly different at the .05 level. When looking at the differences in responses between regular educators (K-6) and special educators (K-6), items 27, 34, and 37 were found to be significantly different at the .05 level. Tables 5-7 provide the F-probability and the average mean rating for each subgroup (regular educators K-6 and special educators K-6).

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Insert Table 5
---------------------

Special educators consider item 27 to be more important than regular educators did on the average.

---------------------
Insert Table 6
---------------------

Item 34 was rated higher by regular educators than by special educators. Regular educators considered this
criteria to be highly important (3) while special educators rated it only moderately important (2) on the average.

-----------------------

Insert Table 7
-----------------------

The third criteria found to be significantly different at the .05 level was item 37. This criteria was rated highly important by regular educators, whereas special educators rated it only moderately important in the selection and evaluation of instructional games and toys.

Discussion

The purpose of this study was to gain an understanding of the qualities and characteristics of instructional games and toys that have an effect on the cognitive, affective, and psychomotor domains of the students at the elementary level (K-6). This study examined the criteria that was considered important by "experts in the field" determined by a review of literature that was available and validated those "expert judgements" by asking teachers to respond to a survey designed to determine what criteria educators considered when selecting and evaluating instructional games and toys.

The results indicated that between subgroups (K-3, 4-6, spe. ed. K-6) significant differences were found at
the .05 level for 3 out of 41 criteria. Special educators rated item 15 (The purpose is to teach new skills) and item 27 (Does the product address auditory discrimination?) higher than the other two groups (regular educators K-3, 4-6). The average mean ratings for each subgroup for item 15 were: K-3, $\bar{X}=2.22$; 4-6, $\bar{X}=1.8574$; spe. ed. K-6, $\bar{X}=2.5395$.

Item number 32 (Does the product address inductive and deductive reasoning?) was rated higher by subgroup 2 (4-6 grade level). The average mean ratings for that item were: K-3, $\bar{X}=2.1176$; 4-6, $\bar{X}=2.5714$; and spe. ed. 4-6, $\bar{X}=1.9167$.

The subgroups were recoded and subgroups 1 and 2 were combined (reg. K-6) and subgroup 3 remained constant (spe. K-6), in order to find any significant differences between regular educators' and special educators' responses. Three criteria were determined to be significantly different at the .05 level. Special educators again rated item 27 higher than regular educators. The average mean ratings for item 27 were: regular ed. K-6, $\bar{X}=1.9286$ and special ed. K-6, $\bar{X}=2.4615$. However, items 24 (Does the product encourage creativity and stimulate the imagination?) and item 37 (Does the product encourage cooperation and sharing skills?) were both rated higher by regular educators ($\bar{X}=2.8438$ and $\bar{X}=2.7576$ respectively) than by special educators ($\bar{X}=2.4615$ and $\bar{X}=2.3333$ respectively).
The validation of these 41 criteria needs to be conducted on a broader scale, with more teachers and in several different geographical locations to receive a better indication of the criteria teachers rate to be highly important in the evaluation and selection of instructional games and toys. It would be interesting to note how this research compares to others done on a broader scale.

The information derived from this study needs to be organized into a format that would be useful to teachers in evaluating and selecting instructional games and toys. The 14 criteria that had a mean average rating of 2.5-3.0 needs to be included on an evaluation checklist. As indicated by the statistical analysis, there were not many instances of significant differences between grade levels taught as regular educators versus special educators. Therefore, it is suggested by the researcher as indicated by the data found, that only one checklist would be needed to cover regular and special education K-6.
REFERENCES


REFERENCES


REFERENCES

DeKoven, B. (1980). Games, toys and puzzles that work in the classroom. Learning, 9, pp. 96-98.


REFERENCES


REFERENCES


REFERENCES


REFERENCES


Appendix A
Criteria and References

1. Attractiveness of packaging
   Public Action Coalition on Toys, 1983
   Schoeffler, 1982
   Cunningham, 1981
   Carey, 1979
   Etter, 1978
   Ball, 1976
   McLaughlin & Trlica, 1976

2. Durability of the product
   Public Action Coalition on Toys, 1983
   Cunningham, 1981
   DeKoven, 1980
   Werner, 1980
   Carey, 1979
   McLaughlin & Trlica, 1976

3. Accuracy of the content
   Werner, 1980
   Croft, 1978
   Etter, 1978
   Ball, 1976

4. Safety
   Levine & McColoum, 1983
   Public Action Coalition on Toys, 1983
   Cunningham, 1981
   Carey, 1979

5. Manufacturer of the product
   Public Action Coalition on Toys, 1983
   DeKoven, 1980
   Fetter, 1978
   Niedermeyer, 1975

6. Are the replacement pieces easily obtained?
   DeKoven, 1980
   Fetter, 1978
   Ball, 1976
   McLaughlin & Trlica, 1976
   Niedermeyer, 1975
   Macbeth, 1974
7. **Availability of supplemental materials and activities**  
DeKoven, 1980  
Werner, 1980  
Fetter, 1978  
Ball, 1976  
McLaughlin & Trlica, 1976  
Niedermeyer, 1975  
Macbeth, 1974

8. **Complexity of the rules**  
Levine & McColoum, 1983  
Public Action Coalition on Toys, 1983  
DeKoven, 1980  
Ball, 1976  
McLaughlin & Trlica, 1976

9. **Complexity of the physical components - are the children able to manipulate the playing pieces?**  
Levine & McColoum, 1983  
Public Action Coalition on Toys, 1983  
Schoeffler, 1982  
Carey, 1979  
Tassia, 1979

10. **Prerequisite skills necessary to play**  
Public Action Coalition on Toys, 1983  
DeKoven, 1980  
Croft, 1978  
Etter, 1978  
Ball, 1976  
McLaughlin & Trlica, 1976

11. **Time Requirement**  
DeKoven, 1980  
Fetter, 1978  
Niedermeyer, 1975

12. **Number of players required to play**  
McLaughlin & Trlica, 1976  
Macbeth, 1974

13. **Development of a logical sequence**  
Croft, 1978  
Fetter, 1978  
Ball, 1976  
McLaughlin & Trlica, 1976
14. Major purpose is to maintain skills already learned

Public Action Coalition on Toys, 1983
Cunningham, 1981
Croft, 1978
Ball, 1976
McLaughlin & Trlica, 1976
Niedermeier, 1975
Nelson & Grenda, 1973

15. The major purpose is to teach new skills

Public Action Coalition on Toys, 1983
Cunningham, 1981
Croft, 1978
Ball, 1976
McLaughlin & Trlica, 1976
Niedermeier, 1975
Nelson & Grenda, 1973

16. Initial cost of the product

Public Action Coalition on Toys, 1983
Cunningham, 1981
Werner, 1980
Fetter, 1978
Niedermeier, 1975
Macbeth, 1974

17. Implementation costs and maintenance costs

Cunningham, 1981
Werner, 1980
Fetter, 1978
Niedermeier, 1975
Macbeth, 1974

18. Can the product be implemented into the current curriculum?

Cunningham, 1981
Werner, 1980
Croft, 1978
Fetter, 1978
Ball, 1976
McLaughlin & Trlica, 1976
Macbeth, 1974

19. The versatility of the product - can it be used in more than one subject area?

Cunningham, 1981
DeKoven, 1980
Croft, 1978
Etter, 1978
The versatility of a product (con’t.)

Fetter, 1978
Ball, 1976
McLaughlin & Trlica, 1976
Niedermeyer, 1975

20. Does the product present contemporary problems, issues, and concerns?

Werner, 1980
Etter, 1978
Ball, 1976

21. Does the product meet the interest level of the students?

Public Action Coalition on Toys, 1983
Cornbleth, 1981
Cunningham, 1981
Tassia, 1979
Ball, 1976
McLaughlin & Trlica, 1976

22. Will the product be challenging to the students?

Public Action Coalition on Toys, 1983
Cornbleth, 1981
Cunningham, 1981
Tassia, 1979
Etter, 1978
Ball, 1976

23. Is the product age appropriate?

Public Action Coalition on Toys, 1983
DeKoven, 1980
Ball, 1976
McLaughlin & Trlica, 1976
Macbeth, 1974

24. Will the students be able to master the skills necessary to play?

Levine & McColoum, 1983
Public Action Coalition on Toys, 1983
Schoeffler, 1982
Tassia, 1979
Etter, 1978
Ball, 1976

25. Can the product be used by a wide range of students with varying degrees of skills?

Public Action Coalition on Toys, 1983
Can the product be used by a wide range of students with varying degrees of skills? (con’t)

Cunningham, 1981
Fetter, 1978
Ball, 1976
Macbeth, 1974

Does the product address the following areas:

26. Problem solving
27. Visual discrimination
28. Auditory discrimination
29. Visual memory
30. Auditory memory

Cornbleth, 1981
McLaughlin & Trlica, 1976
Nelson & Grenda, 1973

31. Emphasis of skills in a specific academic area

Cunningham, 1981
Werner, 1980
Croft, 1978
Etter, 1978
Fetter, 1978
Ball, 1976
Nelson & Grenda, 1973

32. Inductive and deductive reasoning

Tassia, 1979
Croft, 1978
Etter, 1978

33. Other perceptual skills

McLaughlin & Trlica, 1976
Nelson & Grenda, 1973

Does the product encourage the following:

34. Creativity and stimulate the imagination

Levine & McColoum, 1983
Public Action Coalition on Toys, 1983
Schoeffler, 1982
Cornbleth, 1981
DeKoven, 1980
Creativity and stimulate the imagination (con’t.)

Munby, 1979
McLaughlin & Trlica, 1976

35. Self-expression

Levine & McColoum, 1983
Public Action Coalition on Toys, 1983
Schoeffler, 1982
Cornbleth, 1981
DeKoven, 1980
Munby, 1979

36. Competitiveness

Levine & McColoum, 1983
Public Action Coalition on Toys, 1983
Schoeffler, 1982
Cornbleth, 1981
DeKoven, 1980
Tassia, 1979
Clark, 1978
Etter, 1978

37. Cooperation and sharing skills

Levine & McColoum, 1983
Public Action Coalition on Toys, 1983
Schoeffler, 1982
Cornbleth, 1981
Salend, 1981
DeKoven, 1980
Werner, 1980
Munby, 1979
Clark, 1978

38. Social interaction with adults and peers

Levine & McColoum, 1983
Public Action Coalition on Toys, 1983
Schoeffler, 1982
Cornbleth, 1981
Salend, 1981
DeKoven, 1980
Werner, 1980
Munby, 1979
Tassia, 1979
Clark, 1978

39. Curiosity

Levine & McColoum, 1983
Public Action Coalition on Toys, 1983
Schoeffler, 1982
Curiosity (con't.)

Cornbleth, 1981
DeKoven, 1980
McLaughlin & Trlica, 1976

Does the product address skills in:

40. Fine motor area
41. Gross motor

Levine & McColoum, 1983
Schoeffler, 1982
Cornbleth, 1981
Tassia, 1979
Appendix B

Survey

General Directions

Do you make use of games and toys in your classroom?
1. Yes--Blacken a 0 in column D
2. No--Leave blank

If yes please continue, if no please stop
1. K-3--Blacken a 1 in column E
2. 4-6--Blacken a 2 in column E
3. K-6--Special Education--Blacken a 3 in column E

The items listed below are criteria for selecting games and for use in the classroom. Please indicate the degree of importance each item plays in your own selection of a game and/or toy.

SCALE:
1=least important, 2=moderately important, 3=highly important. For those items that are not considered at all, please leave blank.

PHYSICAL FEATURES AND QUALITIES

1. Attractiveness of packaging.
2. Durability of the product.
3. Accuracy of the content.
4. Safety.
5. Manufacturer of the product.
6. Are the replacement pieces easily obtained?
7. Availability of supplemental materials/activities.
8. Complexity of the physical components - are the children able to manipulate the playing pieces?
10. Prerequisite skills necessary to play.
11. Time requirement.
12. Number of players required.

QUALITIES AND FEATURES RELATED TO CURRICULUM

14. The major purpose is to maintain skills already learned.
15. The major purpose is to teach new skills.
16. Initial cost of the product.
17. Implementation costs and maintenance costs.
18. Can the product be implemented into the existing curriculum?
19. The versatility of the product – can it be used in more than one subject area?
20. Does the product present contemporary problems, issues and concerns?

MOTIVATIONAL QUALITIES AND FEATURES
21. Does the product meet the interest level of the student(s)?
22. Will the product be challenging to the student(s)?
23. Is the product age appropriate?
24. Will the student(s) be able to master the skills necessary to play?
25. Can the product be used by a wide range of students with varying degrees of skills?

SKILLS IN THE COGNITIVE DOMAIN
Does the product address the following areas:
26. Problem solving?
27. Auditory discrimination?
28. Visual discrimination?
29. Auditory memory?
30. Visual memory?
31. Emphasis of skills in a specific academic area?
32. Inductive and deductive reasoning?
33. Other perceptual skills?
SKILLS IN THE AFFECTIVE DOMAIN

Does the product encourage the following:

34. Creativity and stimulate the imagination?
35. Self-expression?
36. Competitiveness?
37. Cooperation and sharing skills?
38. Social interaction with adults and peers?
39. Curiosity?

SKILLS IN THE PSYCHOMOTOR DOMAIN

40. Fine motor area?
41. Gross motor area?

42. How do you make use of games and toys in your classroom? (Choose one of the following)
   1. Instruction (teaching and maintenance of skills)
   2. Leisure activities (entertainment or a means of reward)
   3. A combination of 1 and 2.

PLEASE FEEL FREE TO PROVIDE ANY ADDITIONAL CRITERIA AND/OR COMMENTS ON THE BACK OF THIS SHEET.
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Percentage of 3 Ratings by Subgroups

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Table 2

Survey Item with Significant Difference

Item Number 15.

The purpose is to teach new skills.

Rankings

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F-probability = .0033
Table 3

Survey Item with Significant Difference

Item Number 27.

Does the product address auditory discrimination?

Rankings

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<td>5</td>
<td>7</td>
<td>0</td>
<td>2.4615</td>
</tr>
<tr>
<td>K-6</td>
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F-probability = .0290
Table 4

Survey Item with Significant Differences

Item Number 32.

Does the product address inductive and deductive reasoning?

Rankings

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<tr>
<th></th>
<th>Least Important</th>
<th>Moderately Important</th>
<th>Highly Important</th>
<th>Blank</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-3</td>
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<td>2</td>
<td>2.1176</td>
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<td>n=19</td>
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<tr>
<td>Spe. ed.</td>
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<td>7</td>
<td>2</td>
<td>0</td>
<td>1.9167</td>
</tr>
<tr>
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<td>n=13</td>
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F-Probability = .0210
Table 5

Survey Item with Significant Difference

Item Number 27

Does the product address auditory discrimination?

Rankings

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<th>Highly Important</th>
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</thead>
<tbody>
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<td>7</td>
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<td>2.4615</td>
</tr>
<tr>
<td>n=13</td>
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<td></td>
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</tbody>
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F-probability = .0213
Survey Item with Significant Difference

Item Number 34.

Does the product encourage creativity and stimulate the imagination?

Rankings

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<th>Moderately</th>
<th>Highly</th>
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<th>X</th>
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</tr>
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</table>

F-Probability = .0437
Table 7

Survey Item with a Significant Difference

Item Number 37.

Does the product encourage cooperation and sharing skills?

Rankings

<table>
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<tr>
<th></th>
<th>Least Important</th>
<th>Moderately Important</th>
<th>Highly Important</th>
<th>Blank</th>
<th>( \bar{X} )</th>
</tr>
</thead>
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F-probability = .0499