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This study is a content and design analysis of one hundred randomly selected interactive educational games available on the Internet. Analysis revealed that there are a small number of high quality games in terms of design and content. Further it was determined that most game designers appeared to be aware of the important design criteria. It is surmised that some collaboration with educators likely exists.

Headings:

- Content Analysis
- Educational Games
- Games
- Interactive
- Internet
- World Wide Web

A CONTENT AND DESIGN ANALYSIS OF INTERACTIVE EDUCATIONAL  
GAMES ON THE INTERNET

By  
Jennifer Schupp

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Approved by:

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Advisor

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## Introduction

The Internet has become widely popular especially for children. Many of them are believed to use their free time to play and “surf” the Internet. Teachers are quickly becoming aware of the advantages of using online activities in the classroom to further a student’s educational experience. Because of the wide use of the World Wide Web by educators and students, many Internet sites have been targeting these groups with the use of educational games that children can play at home, or that are integrated into a school’s curriculum. Two questions arise, “Are these games of high quality and is the content correct”? Further, are they well designed and do they contain information that will enhance the student’s overall learning experience?

These are the questions that merit exploration. Additional questions could address the design of the game, the design of the site, and ownership and creator of the site and its games. Does the quality of a game vary depending on whether the source is a commercial company, a personal web page, a university, or the government? Finally does the success of a game depend on the accuracy of the content and the design aimed at the correct audience.

Research has been done on the usability of web sites similar research addressed educational CD-ROM computer games. Unfortunately, no research has directly focused on interactive educational games available on the Internet. This study attempts to at least begin to fill that void.

## Literature Review

Many studies have been done on informational educational web sites, computer based training, and educational software games but not on interactive educational games on the Internet. After looking at different articles and books on the subject, the analysis and information about content and the usability issues were combined for the study. A study on interactive educational web games has not been done, but information from the literature was found to be appropriate for the study.

There are different aspects of educational games that the literature addresses: the first is content, layout and design, and finally authenticity. These are the main issues found in studies that have been conducted on related topics.

## Content

Content of the games is of the up most importance and to know if a game's content is good we must ask a number of questions that deal with appropriateness for a certain audience and correctness of the information. The Educator's Guide to the Web details the importance of content, "despite the tendency to focus on the glitz and glamour of a web site, the content of the page – the text that conveys the message – is probably the single component

that should be most closely scrutinized”(Robin, B., Keeler, E., & Miller, R. ,1997, p.234). This quote is directly on point, without the correct and quality content, a game does not have any educational value and will fail at being categorized as an educational game. Robin goes on to give examples of criteria that the site should be evaluated and these have been included in the evaluation form.

Sarapuu and Adojaan in their conference paper, delve into content analysis too. Their focus is on curriculum related aspects of the game or site, which falls under the heading of content. They believe that, “one obvious prerequisite for successful usage of instructional web site is that all the texts and presented materials are correct in its content and comprehensible by the users”(Sarapuu, T. & Adojann, K., 1998, p. 4). If the content is not correct or if the content is correct but it is beyond the intended audience’s level the game will fail. These are some of the more important aspects of the game. Later in the article Tago states their evaluation criteria of which have been included in the evaluation form.

## Layout and Design

The layout and design of a game or web site may be the first thing a user notices. This aspect may keep or prevent the user from coming back if they do not like the quality of the site. Layout and design is usually very time consuming but many people enjoy working on it. Robin puts the issue best, “some sites with great information can be rendered unusable by visually confusing interface design”(Robin, B., Keeler, E., & Miller, R. ,1997, 230). This

is especially true when designing games and web sites for children. As the literature states this is one of the most important aspects of the game and the topic has been included as part of the evaluation criteria.

Kirk and Shoemaker's conference paper on Internet based training focused mainly on the methodology and results of the study, but the attributes used to rate the Internet based programs on. He mentioned several attributes, which deal with the layout and design of the IBT, which is comparable to an educational game. The attributes he mentioned are included in the evaluation form.

The Educator's Guide to the Web has some ideas on layout and design and their theory on fast transfer of video and audio and also timely media feedback to students was relevant. Children will not want to play a game if they are bored with it because there is a large lag time. These two aspects are important and part of the evaluation criteria. The book has much to say about layout and design, "no matter how interesting the topic is, the educational message will be lost as students and teachers quickly lose interest in the site if the layout is sloppy and disorganized or if the site simply can't be navigated"(Robin, B., Keeler, E., & Miller, R. ,1997, p. 232). This statement has merit and that is why layout and design is such an important section to concentrate on for an educational game site. If the content of a game is amazing but a user can't find it on the web site all the work and planning is lost.



## Game Site Authenticity

The main point of authenticity is who created the material. As would be expected a commercial site, is felt by Robin to be less authoritative than a governmental or educational site. This study will show that many of the commercial sites are just as valuable as the government or college resources. The educational games that were reviewed were on commercial sites. There is so much money and resources that go into developing a game that neither the government nor the colleges can afford to devote time and resources to developing games. Robin mentions that providing a page detailing your credentials and detailing the objectives of the site is important and so that has been included in the evaluation criteria. When a commercial site includes their company information it conveys a believable and credible game and site.

The Educator's Guide to the Web touches on the concept of credibility, "the web is, more often than not, a mass of electronic documents that come to us with little or no information about their creators or, notably, their creator's motives"(Robin, B., Keeler, E., & Miller, R. ,1997, p. 222). Those motives may be to make money, but the companies or person is providing a quality game for free to the public they have a right to try and recoup the cost of their expenses. If the person or company has criminal motives than yes there is a problem. Robin's authenticity attributes have been included in the evaluation.

## Effectiveness

Two articles that studied games currently in use were reviewed to see if the games were effective. One game was developed for the classroom and does not involve a computer; it is a math version of Wheel of Fortune. The game is designed to teach students basic algebra and the article described it as being successful. The article states, “this game enhanced students’ confidence, reasoning, and willingness to solve problems and encouraged mental computation and estimation”(Holbrook, E. p.33). Not only are games fun for students to play, but also they help them learn. This is encouraging news for educational game inventors or entrepreneurs. The inventors of interactive educational games on the web will need to pay attention to the success of classic games that have been played in the classroom for years to make sure the Internet games are as successful.

Holbrook goes on to say, “the game integrated mathematics with such areas as history and geography and reinforced basic spelling, language, and perceptual skills”(Holbrook, E. p. 33). It is very encouraging that a game in the classroom touches on different elements of the curriculum. Many of the games that were reviewed during this study dealt mainly with one aspect of the curriculum.

Another article that was reviewed looked at two CD-ROM vocabulary games. The article compared these games against each other to see if they were effective and found that, “the participants’ game scores increased steadily with two to four reviews of the word”(Benne, M. & Baxter, K. p. 257). With

repetition and practice the CD-ROM games were successful. Benne and Baxter state that, “computerized games could be advantageous for families and for classrooms because different software can be installed according to the needs of the individual users”(Benne, M. & Baxter, K. p. 256). Games on the Internet can easily be customized because many have skills levels the player chooses before starting the game. Customization would benefit the player by improving their knowledge at a pace the user sets.

## Purpose of the Study

The purpose of this study is to perform a content and design analysis of randomly selected interactive educational games available on the Internet.

Questions to be answered by the study are how do the games compare to the recommended design criteria and the recommended content criteria? Does the author either, commercial, governmental, or academic, of the site determine if the game will be good quality or not? Are certain criteria related to others; if the site is designed well does that mean that the content is excellent too?

The goal is to see what the quality of the design of the games and the quality of the context. Also, are there are correlations between the individual criteria and does one have an effect on any other one?

## Methodology

Five widely used Internet search engines, Google, Yahoo!, AltaVista, Infoseek, and Excite were used in this order to locate easily accessible interactive educational games on the Internet. Easily accessible was defined as games that were located by using these 5 search engines and found by searches employing “educational game” and “interactive” , “math” and “game” and “interactive” , and also “vocabulary” and “game” and “interactive” as key words. Additionally, the games also had to be free and not require registration to use them.

The results of these searches produced many hits, however the number of interactive games were lower than expected. With the popularity of the Internet and the boom to be the first site out there with a great idea, it had been assumed that there would be a plethora of educational games. Such was not the case. All told one hundred interactive educational games were found to analyze. The 100 games and a brief description of each are given in Appendix A.

Several papers and monographs that address CD-ROM computer games, designing educational web sites, and sites for distance education were reviewed to gather standards for educational games. The information these sources provided were put together to produce a single evaluation sheet

against which the games sites were assessed. There were thirty-five individual attributes or criteria that were rated in three categories. These three categories were layout and design, authenticity, and content. There were 15 attributes in the game site layout and design category, 5 attributes in the game site authenticity category, and 15 attributes in the game content category.

Only one person evaluated the games. Thus, two independent individuals completed evaluations for 5 games to validate the instrument. These two people were given 5 randomly chosen games out of the 100 and asked to rate them on the 35 evaluation criteria. After the results were collected the ratings by the testers were compared to the original ratings assigned by this researcher and attributes were discarded if there was more than a one point difference in scoring between the rating. The initial instrument had 35 criteria of which 9 were discarded resulting in 25 criteria for analysis, which is roughly 26%.

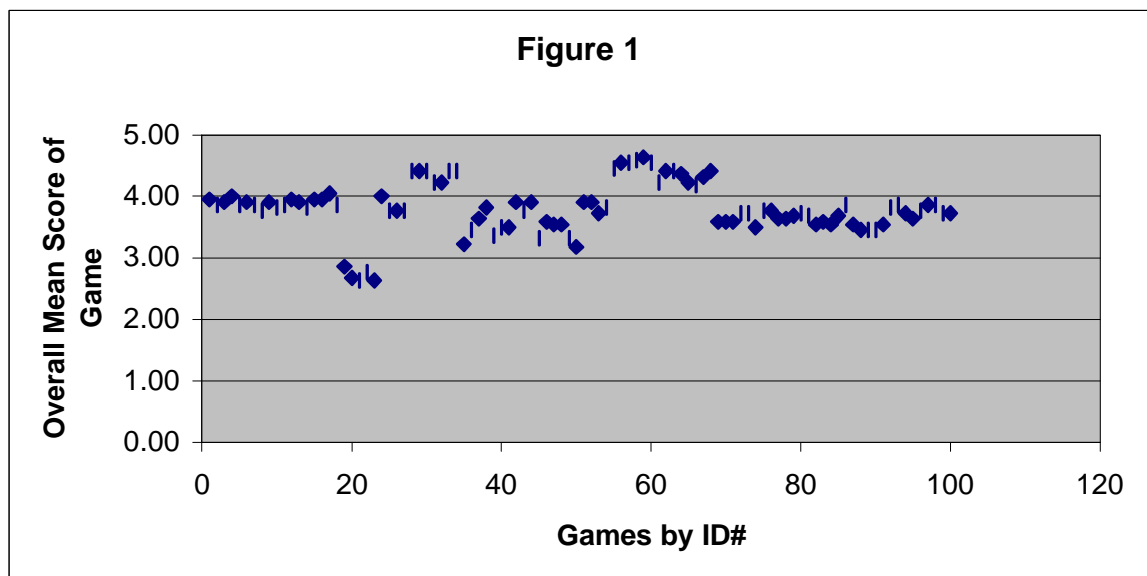
Attributes were discarded because the range of evaluations was so high. This was due partly to miscommunication on the part of the researcher in describing the instructions. To prevent this miscommunication there should have been a detailed description of what each evaluation criteria was addressing. This way the testers would know exactly what aspect of the game they were evaluating. The 26 attributes and values used in the analysis are in Appendix A.

## Results

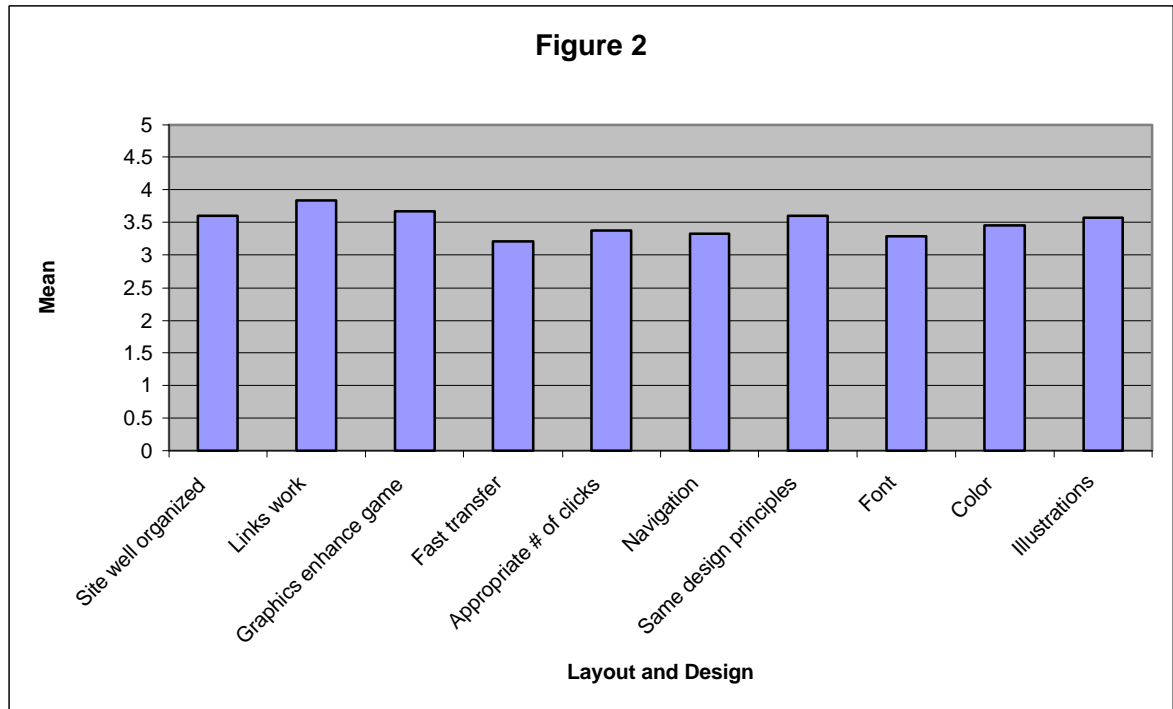
Each game was rated on the 26 attributes using a rating of 1 to 5. Below the ratings are defined.

1	Poor
2	Fair
3	Average
4	Good
5	Excellent

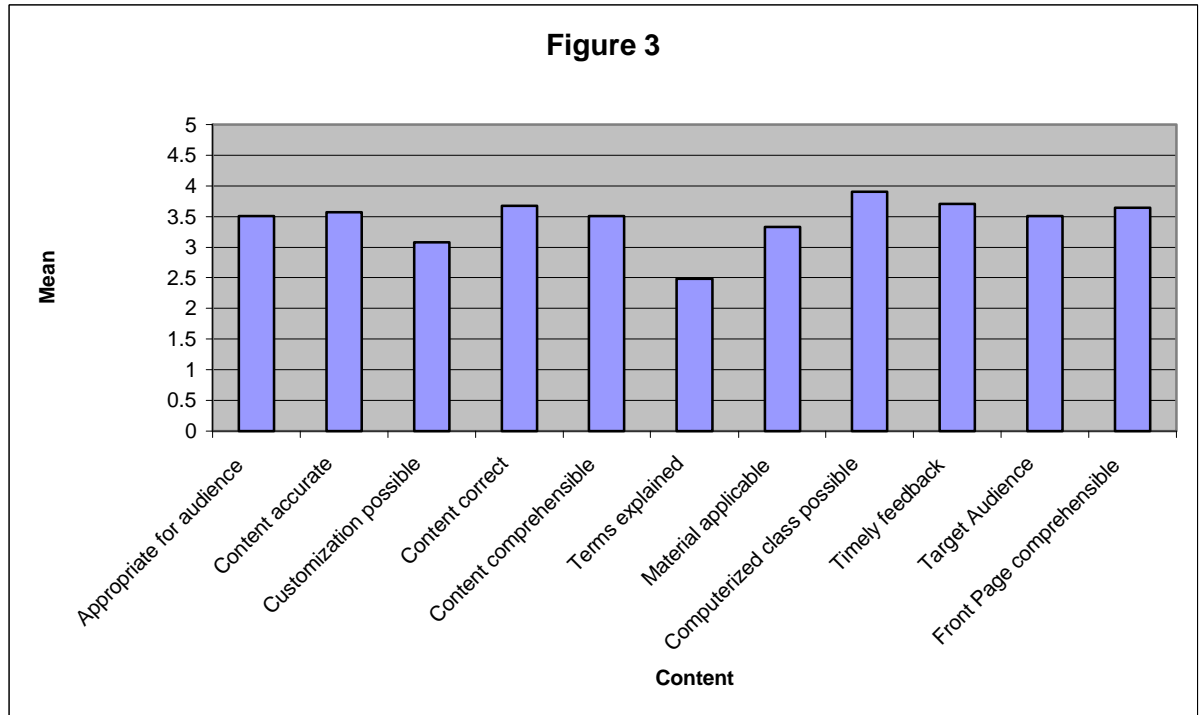
The range of values was from 2.64, this was the value given to two different games on different sites, to a value of 4.64 for 1 game. Figure 1 below shows that there is quite a difference in the range of values.



The mean value for the individual sections on which the games were rated on was very important. They provided an assessment of the games in either design or content.



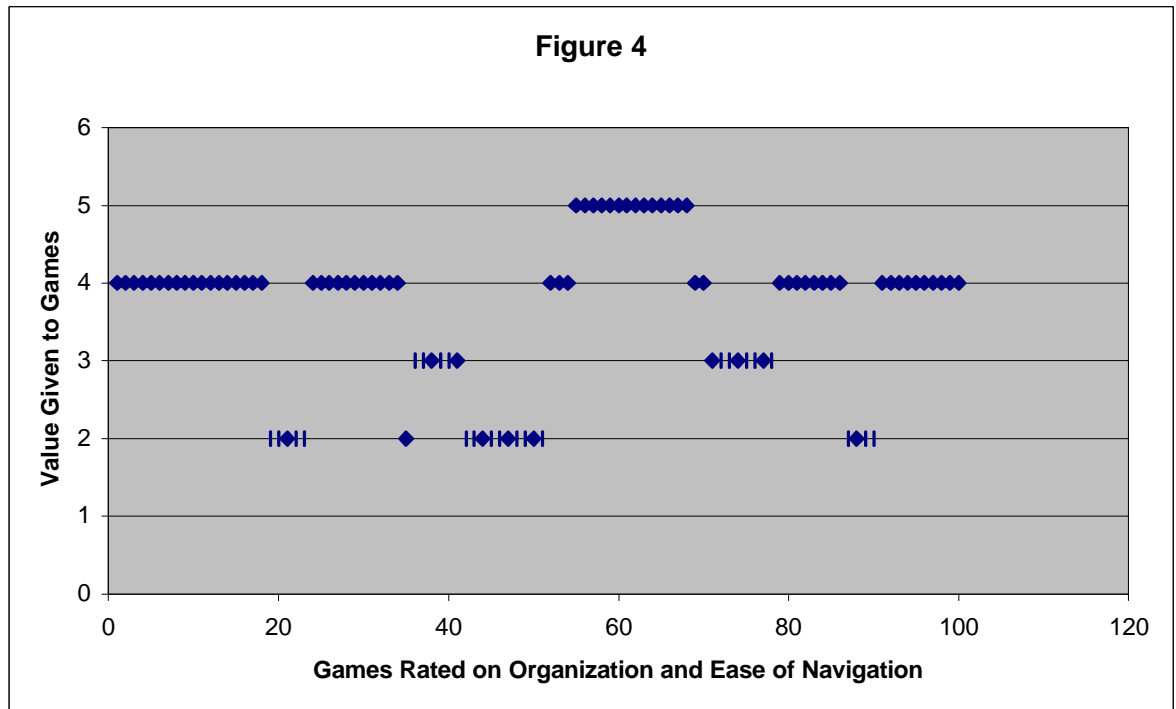


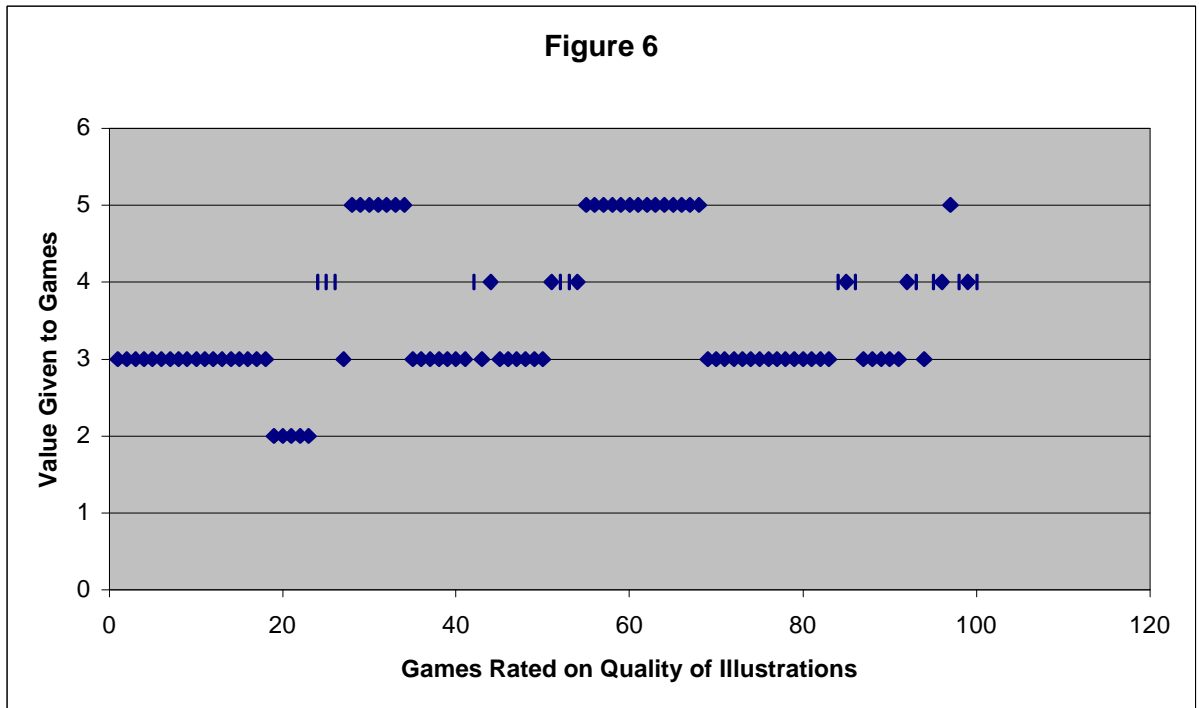
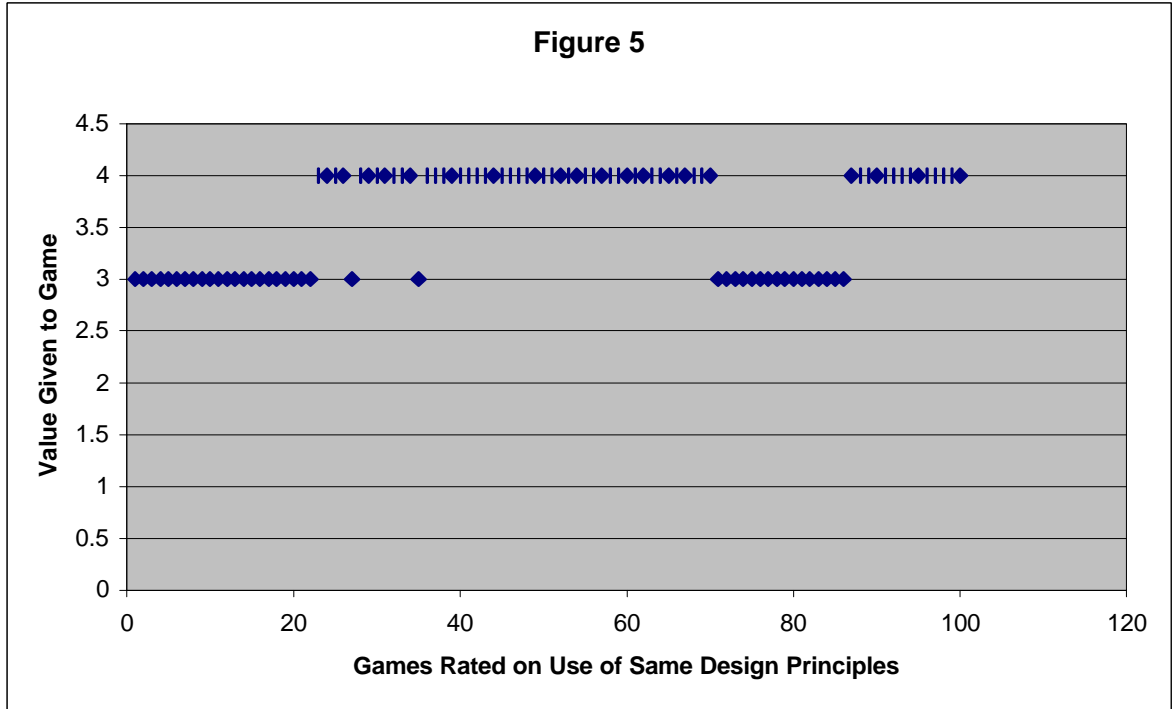


The overall average for content shown in Figure 4 was 3.16, which is still average or a fraction better. As shown in Figure 2, the layout and design average for all sites was 3.49 which is a little better than average. Since all of the games reviewed were on commercial sites, it appears these sources know how to design a “good” web site. It is the content side where they appear to perform at a lower level. One could question the motivation is on the part of the developer, is it purely monetary or do they care about the content of the games mostly?

Three criteria that are important when analyzing the layout and design of educational games is the ease of navigating the site, the use of the same design principles, and the quality of the illustrations. The following figures show the range of values given to the main attributes and the plateaus that occur in

different game number ranges. These plateaus occur because many of the games are on the same site and the criteria used to evaluate the games are based on the attributes of the host site.





These three criteria were the most important in an educational game from the design perspective. While content is an important aspect of the games, the

design and feel of the games is equally important. These three attributes were so closely rated that it seems all the games and sites did an average job of design and layout. While some games and sites are much better than the others, a small number of sites had poor ratings.

In addition of a consideration of the average scores for all the sites, the correlations between selected attributes can be important. The data was analyzed using SAS, a statistical application. In this analysis correlations between certain attributes were found. Correlations are defined as the SAS System for Elementary Statistical Analysis states,

“a number called the correlation coefficient measures the strength of the relation between two variable. The letter  $r$  represents the correlation coefficient. Values of  $r$  range from  $-1.0$  to  $+1.0$ . An  $r$  equal to  $+1$  corresponds to a plot of points that fall exactly on a downward-sloping straight line. Values of  $+1$  or  $-1$  usually don't occur in real situations because plots of real data don't fall exactly on straight lines. In reality, you get values of  $r$  between  $-1$  and  $+1$ . Relatively large positive values of  $r$ , such as  $0.7$ , correspond to plots that have a clear upward trend, and large negative values of  $r$  correspond to plots that have a downward trend. An  $r$  equal to  $0$  corresponds to a scattering of points that shows neither an upward nor a downward trend”(Schlotzhauer S.D. & Littell, R.C., 1997, p.286).

Correlations were used to see if certain attributes were linked, in other words, if the game or site had attribute  $x$  rated highly did that mean that attribute  $y$  would be strong too. The attributes with the highest correlation were Quality of illustrations and How well the site was organized. The correlation coefficient was  $.65$  meaning that these two attributes are closely related for most sites. I.E., if the quality of illustrations is good than the site is probably well organized.

Another high correlation existed for Contact information made available and If the target audience of the material was clear. If the appropriate contact information was on the site then they were telling the users the appropriate age group or grade level. This means that the game sites are paying attention to detail. The correlation for these attributes is .64.

The correlation between Identification of the developers and Stating the target audience is .58, which is almost as high as .64. These seem to be very closely related attributes.

Negative correlations existed between the game Applicability without supplementary material, If the developers identified themselves, and If it was easy to contact them. Contact and applicability was  $-0.12$  and developers identified and applicability was  $-0.58$ . This indicates that these attributes have no effect on each other, i.e., if there is a presence of one of these attributes the site may or may not have the other attribute present.

The correlation that was very surprising was the correlation between If the directions were easy to understand and If the content of the information was comprehensible to the intended audience. The correlation coefficient is 0.02 and was expected to be much higher. It was analyzed that if the developers took the time to work on the directions or make the game easy to understand with minimal directions than they would take the time to make sure the content was appropriate for the age group they were targeting.

## Conclusion

There are not many interactive educational games on the web that are easily found easily and accessible on the World Wide Web, although the expected number of games was high. The expected number was big because the age group for educational games is a large demographic and it was thought that companies would be targeting this demographic.

It was also expected that there would be more poor quality games, many average games, and a few excellent games. Again, just the opposite was found. There are many excellent games, and many average games and only a few poor quality games. What was found was that there are a small number of high quality games in terms of design and content. Further, most game designers appeared aware of the important design criteria. It is opinioned that there must have also been some collaboration with educators because the content of the games is good also.

## Appendix A –Analyzed Games

[www.funbrain.com](http://www.funbrain.com)

1. The Plural Girls – Can either play it as multiple choice or fill in the blank. You decide what the plural form of the word given is and you are doing this to rescue cartoon animals from a bubble machine.
2. Number Crackers – You can choose the level of difficulty in this game. In this game you fill in the missing number in the series.
3. Space Hopper – This game allows player to fill in or choose the name of the constellation described and pictured.
4. 2Bee or Nottoobee – This is a game where you choose the correct verb to complete the sentence.
5. Guess the Number Plus – Math word problems. It gives you several chances to guess the right number and tells you if you are too high or too low.
6. Math Baseball – The player is given a math word problem to solve and based on the answer the player is out, or hits a single, double, triple, or homerun.
7. Power Football – The player is given a math problem to solve and based on the answer the ball gets closer or falls from the goalpost.
8. Shape Surveyor – The player is given a series of geometry questions to solve.
9. Cookie Dough – The player is to write the number seen on the check or write the number on the check that is spelled out. A basic game.
10. Line Jumper – The player is given an addition or subtraction problem to solve and they choose the correct number off of a number line.
11. Change Maker – The player is told the amount of the sale and the amount paid. The player then decided how much change to give back.
12. Fresh Baked Fractions - The player is shown 4 fractions and must choose the one that is not equal to the other fractions.
13. The Grammar Gorillas – The player is given a sentence and must decide which word is the part of speech that is asked for.

14. Paint by Idioms – The player is given an idiom and then chooses the correct definitions from a given list.
15. Spellaroo – The player is given a sentence and must decide which word is spelled incorrectly.
16. Spell Check – The player is given 4 words and they must choose which one is misspelled. The player then has to spell the word correctly to get a point.
17. What's the Word – The player is shown a picture and must choose what the object is from a list of 4 words. This game is aimed at a younger age group.
18. Where is That? – The player is shown a map of the continent they choose (US, Africa, Europe, etc.) and a state is highlighted. The player must then choose the name of the state from the list to get a point.

[www.nanana.com/splrot.html](http://www.nanana.com/splrot.html)

19. Alphabet Puzzle – This game has the player choose the correct piece to fit the word puzzle. It uses association of words and letters to test the player.
20. Sentences Puzzle – The player chooses a part of the sentence from one side of the puzzle and puts it on the other side of the puzzle to construct a sentence and answer the question.
21. Making Sentences – The player chooses which person to construct the sentences in and then by clicking words makes a sentence.
22. The Hoppers SL – The player is shown a group of words that move around and they must choose the correct spelling quickly.

[www.edgamesandart.com/oddities/findme.html](http://www.edgamesandart.com/oddities/findme.html)

23. The Oddly Word Game – The player is given a board of 12 slots and they must find the word that is the opposite of the given word.

[www.learningkingdom.com](http://www.learningkingdom.com)

24. Gaggle – This game brings the player through a tutorial about the names of groups of animals. There is then a game to test them on their knowledge. Once the player has mastered the beginning level they may advance to the advanced level.
25. Blankety-Five Squared – This game teaches the player how to square numbers and then they can play a game to test their knowledge.



26. Eleven Times – This game teaches the player how to multiply numbers by 11. The player can then test their knowledge with a game.

[www.meganova.com/megakids/flash.htm](http://www.meganova.com/megakids/flash.htm)

27. Flash – The player must answer math problems and if the answers are right the player does better.

[www.freeenglish.com/english/index.cfm](http://www.freeenglish.com/english/index.cfm)

28. Coco Nuts – The player listens to the word that was spoken and then chooses the correct spelling of the word from a list.

Spelling Bee – The player listens to the word that was spoken and then must spell it out on the screen in a given amount of time.

29. Spelling Bee – The player is shown a picture and must choose the correct spelling of the picture that is shown.

30. Jungle Guy – The player is given a sentence and must choose the right word to complete that sentence.

31. Sound Off – This is a match game where the player clicks on the cards to find the two words that match. When the matching words are found the game says them out loud.

32. Bunny Drop – The player guesses letters that they think are in the word. The player only gets 6 guesses.

33. Swap Game – The player is given a sentence out of order and must swap the words around until they get them in the correct order.

34. Scrambled Sentences – The player is given several words that make up a sentence and they are to put that sentence in order.

[americanpresident.com/xword.html](http://americanpresident.com/xword.html)

35. The Private Office – This is a crossword puzzle that asks questions about American presidents and the player must fill them in to win.

[www.cut-the-knot.com](http://www.cut-the-knot.com)

36. Changing Colors – In this game the player tries to get all of the squares on the board but one white.

37. Fish Soup – The participant plays against the computer by choosing 3 words out of 9 that share the same letter.

[www.sheppardsoftware.com/contst.htm](http://www.sheppardsoftware.com/contst.htm)

38. License Plate Game – The player is given 4 license plates and must decide which one has the numbers that match.

39. Algebra – The player is given a simple algebra problem to solve and must choose the correct answer from a list.

40. Vocabulary Quiz – The player is shown a word and chooses the definition from a list. The player gets points for each word that they get right.

41. Vocabulary Context Quiz – The player is shown a sentence that uses the word in question. The player guesses the meaning of the word from the given list after reading the sentence.

[www.miksike.com](http://www.miksike.com)

42. A Happening on the Ship – A short story is on the screen and the player must replace certain words in the story with synonyms from a given list.

43. A Trip – The player is trying to visit a friend in Estonia and to get there must ask the correct questions. A list of 5 questions is given and as the player asks one of them they advance in their trip and are given a different set of questions of which they can ask one.

44. Dwarves here, there and everywhere – A story about Dwarves is shown on the screen and the player must replace words with their synonyms from a given list.

45. Hidden Letters – The player can see only certain letters in a sentence and must guess what the entire sentence says.

46. Houses – The player is shown 2 pictures and then must choose which sentences go with the picture.

47. Portrait of a King – The player is shown a picture of an animal and must choose which facts are true from a list.

48. Substituting – The player is given a sentence and must choose the correct word from a list to complete it.

49. The Germ's Job – The player pretends they are a germ and must decide what can make a hole in a tooth. They choose the object from a list.

50. The Matter of Taste – A list of statements are given to the player and they must decide whether the statement is a truth that everyone agrees with or if it can be argued.

51. The Promise – A story is shown on the screen and the player chooses words from a list to replace certain words in the story.

[brainquest.com](http://brainquest.com)

52. The Planet Earth Challenge – This is a game that asks questions about the earth and the player chooses the correct answer from the list.

53. Presidential Building Blocks – This game is a bit like wheel of fortune, in that there is a phrase that the player must figure out by guessing letters. The phrases are about presidents.

54. Picture This – This game breaks a picture up and the player must put it back together while they are being timed.

[www.learningplanet.com](http://www.learningplanet.com)

55. Spacey Math – The Player must correctly answer math problems or risk getting taken over by the aliens.

Number Train – The Player puts together a train and as they attach the box cars on the screen the computer counts them.

56. 123 Order – In this game there are barrels that are numbered and one number on the barrel is missing and the player must choose which number goes on the barrel.

57. Count Your Chickens – The computer shows pictures of animals on the screen and the player must count the animals and choose the correct number from a list.

58. Alphabet Action – The Player clicks on a letter of the alphabet to hear it and see a picture. This game is for 4 and 5 year olds who are learning to read and spell so I considered this a game for their level.

59. ABC Order – This is the same game as 123 Order but it uses the alphabet and the player must decide which letter goes on the barrel.

60. Mr. E's Memory Game – This is a game of memory using shapes, numbers, and letters.

61. American History – This is a crossword puzzle that uses clues from American history.
62. Antonyms and Synonyms – This is a crossword puzzle whose clues are antonyms and synonyms.
63. Animals – This is a crossword puzzle whose clues are animals.
64. France – This is a crossword puzzle that uses clues about France.
65. Ancient Egypt – This is a crossword puzzle that uses clues about ancient Egypt.
66. Fraction Frenzy – The player must choose the matching fractions in under a certain amount of time.
67. Geography Quiz – The player is asked a series of geography questions that they must answer correctly to get more points.

[aplusmath.com](http://aplusmath.com)

68. Matho – This game is similar to Bingo in that the player answers math questions on a board and when they get Bingo the game is over.
69. Hidden Picture – The player answers math questions to uncover the hidden picture.

[www.saxonpub.com](http://www.saxonpub.com)

70. Basic Facts – This game flashes a math problem up on the screen and the player has to choose the box with the correct answer.
71. Picture-Word Match – The player is shown a word and they must choose the picture that represents that word.
72. Word-Picture Match – The player is shown a picture and they must choose the word that corresponds to the picture.
73. Multiple Counting – The player must count numbers by a given amount.

[www.scienceacademy.com](http://www.scienceacademy.com)

74. BasketMath – The player is given a math problem to solve and when they solve it correctly they make a basket.

75. Writing Numbers – The player is given a number written out and they must type the number.

76. Map Reading – The player is given a word problem that deals with map reading to solve.

77. Verbal Reasoning – The player is given word problems to solve.

[www.conexusinc.com](http://www.conexusinc.com)

78. Bubbleoids – The player must solve the math problem before the asteroid hits the ship.

79. Hopper – The player must make the frog jump on the word shown in the picture to win.

[www.kidspage.com](http://www.kidspage.com)

80. Slider Puzzle – The player must put the puzzle together by clicking on the squares on the screen.

81. Pluck a Perl – The player is shown a description of a word and must click it on the screen before it disappears.

82. Frog Well – The player must answer math problems in a given amount of time by shooting the correct answer with the frog's tongue.

83. Gopher Hide n Seek – A pattern is shown on the screen and then the player repeats the pattern on the screen.

84. Cannon Ball Lake – The player uses a cannon and must change the angle and velocity to spell out words on the screen.

85. Lemonade Stand – The player owns a lemonade stand and makes decisions on how many glasses to make, what to charge, and where to sell it. They then go to bed and the game tells them if they made good decisions.

[www.hungryfrog.com](http://www.hungryfrog.com)

86. Hungry Frog Math Arithmetic Lite – In this game the player solves a math problem and then has the frog and bug select the correct answer.

87. Latin Vocabulary Game – In this game the player matches up the Latin word with the English translation using the frog and the bug.

88. French Vocabulary Game – In this game the player matches up the French word with the English translation using the frog and the bug.

89. Spanish Vocabulary Game – In this game the player matches up the Spanish word with the Spanish translation using the frog and the bug.

90. Alphabet Learning Game – In this game the player matches up the letter from the word with the letter on the screen.

[www.funschool.com](http://www.funschool.com)

91. Animal Tracks – The player matches up the animal track with the correct animal.

92. Paint Brush Math – The player solves math problems to paint the picture.

93. Fall Fever – The player must catch the leaves and the game counts the leaves as they go in the bucket.

94. X Word Madness – The player fills in the blank spaces to complete the word.

95. Wild Animals – The player matches the parts of the animal with the correct animal and then learns about that animal.

96. Farm Addition – The player counts and adds up the number of animals they see on the screen.

97. Monster Numbers – There are hidden numbers in a picture and the player must find them.

98. Where's that U.S. State? – This game shows a map of the United States and the player is asked where a certain state is and they must click on the correct one.

99. What's the Difference? - The player must click on the differences between the two pictures shown on the screen.

100. Shape Racer – The player must place the shapes given on the screen into the correct slots.

## Appendix B – Completed Game Scorecard





www.funbrain.com  
Fresh Baked Fractions  
www.funbrain.com  
The Grammar Gortilas  
www.funbrain.com  
Paint by Idioms  
www.funbrain.com  
Spellaroo  
www.funbrain.com  
Spell Check  
www.funbrain.com  
What's the Word  
www.funbrain.com  
Where is That?  
www.nanana.com/abc.html  
Alphabet Puzzle  
www.nanana.com/abc.html  
Sentences Puzzle  
www.nanana.com/abc.html  
Making Sentences  
www.nanana.com/spirot.html  
The Hoppers SL

**Game Site Layout and Design**

Is the game site well organized and easy to navigate?	4	4	4	4	4	4	4	4	2	2	2	2
Do all of the links work?	4	4	4	4	4	4	4	4	3	3	3	3
Do the graphics(photos, figures, audio, video) enhance the presentation of information?	3	3	3	3	3	3	3	3	2	2	2	2
Is there fast transfer of picture and video material?	4	4	4	4	4	4	4	4	3	2	1	4
Are download buttons provided for needed software?	na	na	na	na	na	na	na	na	na	na	na	na
Appropriate number of clickable items per page?	4	4	4	4	4	4	4	4	2	2	2	2
Are the navigational devices suitable for basic school students?	4	4	4	4	4	4	4	4	2	2	2	2
Are the same design principles used throughout the game site?	3	3	3	3	3	3	3	3	3	3	3	3
Is the appropriate font is used?	3	3	3	3	3	3	3	3	2	2	2	2
Are the colors of the text are resonable and consistent?	3	3	3	3	3	3	3	3	2	2	2	2
Is the quality of illustrations is good?	3	3	3	3	3	3	3	3	2	2	2	2

**Game Site Authenticity**

Are the developers of the site identified?	5	5	5	5	5	5	5	5	2	2	2	2
Is the contact information available for the designer or development team?	5	5	5	5	5	5	5	5	2	2	2	2
Who is the site developed by?(University, government, institution, commercial)	com	com	com	com	com	com	com	com	com	com	com	com
Is there advertising that overpowers or influences the content of the site?	2	2	2	2	2	2	2	2	5	5	5	5

**Game Site Content**

Is the content appropriate for the intended audience?	3	3	3	3	3	3	3	3	3	3	3	3
Is the content accurate and up-to-date?	3	3	3	3	3	3	3	3	3	3	3	3
Is the customization of materials to students possible?	5	5	5	5	5	5	5	5	2	2	2	2
Is the presented material correct in its content?	4	4	4	4	4	4	4	4	3	2	2	2
Is the content of information comprehensible for the intended audience?	4	4	3	4	4	4	5	3	3	3	3	3
Are all the terms well explained?	3	3	2	3	3	3	3	3	2	2	2	2
Is the material of the site applicable without supplementary materials?	3	2	2	3	3	3	4	2	3	3	3	3
Is the material of the site usable in a computerized class?	4	4	4	4	4	4	4	4	3	2	2	2
Is there timely media feedback to students?	4	4	4	4	4	4	4	4	4	3	3	3
Is the target audience of the presented material clear and comprehensible?	3	3	3	3	3	3	3	3	2	2	2	2
Is the front page reasonable and comprehensible?	4	4	4	4	4	4	4	4	3	3	3	3

www.edgamesandart.com  
The Oddy Word Game  
www.learningkingdom.com/  
Gaggle  
www.learningkingdom.com  
Blankety-Five Squared  
www.learningkingdom.com  
Eleven Times  
www.meganova.com  
Flash  
www.freeenglish.com  
Coco Nuis  
www.freeenglish.com  
Spelling Bee  
www.freeenglish.com  
Jungle Guy  
www.freeenglish.com  
Sound Off  
www.freeenglish.com  
Bunny Drop  
www.freeenglish.com  
Swap Game

**Game Site Layout and Design**

Is the game site well organized and easy to navigate?	2	4	4	4	4	4	4	4	4	4	4	4
Do all of the links work?	3	4	4	4	4	4	4	4	4	4	4	4
Do the graphics(photos, figures, audio, video) enhance the presentation of information?	2	4	4	4	3	4	4	4	4	4	4	4
Is there fast transfer of picture and video material?	4	2	3	3	3	3	3	3	3	3	3	3
Are download buttons provided for needed software?	na	na	na	na	na	yes	yes	yes	yes	yes	yes	yes
Appropriate number of clickable items per page?	2	3	3	3	3	4	4	4	3	4	4	4
Are the navigational devices suitable for basic school students?	2	3	3	3	3	4	4	4	4	4	4	4
Are the same design principles used throughout the game site?	4	4	4	4	3	4	4	4	4	4	4	4
Is the appropriate font is used?	2	3	3	3	3	4	4	4	4	4	4	4
Are the colors of the text are resonable and consistent?	2	4	4	4	3	4	4	4	4	4	4	4
Is the quality of illustrations is good?	2	4	4	4	3	5	5	5	5	5	5	5

**Game Site Authenticity**

Are the developers of the site identified?	2	5	5	5	3	5	5	5	5	5	5	5
Is the contact information available for the designer or development team?	2	5	5	5	3	5	5	5	5	5	5	5
Who is the site developed by?(University, government, institution, commercial)	com	com	com	com	com	com	com	com	com	com	com	com
Is there advertising that overpowers or influences the content of the site?	2	1	1	1	3	4	4	4	4	4	4	4

**Game Site Content**

Is the content appropriate for the intended audience?	3	4	3	3	4	4	4	4	3	2	4	4
Is the content accurate and up-to-date?	3	3	3	3	4	4	4	4	4	4	4	4
Is the customization of materials to students possible?	2	3	2	2	5	4	4	4	3	4	4	4
Is the presented material correct in its content?	2	4	4	4	4	4	4	4	4	4	4	4
Is the content of information comprehensible for the intended audience?	3	4	3	3	4	4	4	4	3	2	4	4
Are all the terms well explained?	2	5	3	3	3	3	3	3	3	3	3	3
Is the material of the site applicable without supplementary materials?	3	4	3	3	4	4	4	4	4	4	4	4
Is the material of the site usable in a computerized class?	2	4	4	4	4	4	4	4	4	4	4	4
Is there timely media feedback to students?	3	4	4	4	4	4	4	4	4	4	4	4
Is the target audience of the presented material clear and comprehensible?	2	3	3	3	3	4	4	4	4	4	4	4
Is the front page reasonable and comprehensible?	2	4	4	4	3	4	4	4	4	4	4	4

www.freeenglish.com  
Scrambled Sentences  
americanpresident.com  
the Private Office  
www.cut-the-knot.com  
Changing Colors  
www.cut-the-knot.com  
Fish Soup  
www.sheppardsoftware.com  
License Plate Game  
www.sheppardsoftware.com  
Algebra  
www.sheppardsoftware.com  
Vocabulary Quiz  
www.sheppardsoftware.com  
Vocabulary Context Quiz  
www.mikstake.com  
A Happening on the Ship  
www.mikstake.com  
A Trip  
www.mikstake.com  
Dwarves here, there and everywhere

**Game Site Layout and Design**

Is the game site well organized and easy to navigate?	4	2	3	3	3	3	3	3	3	2	2	2
Do all of the links work?	4	3	4	4	4	4	4	4	4	4	4	4
Do the graphics(photos, figures, audio, video) enhance the presentation of information?	4	3	3	3	4	3	4	4	4	4	4	4
Is there fast transfer of picture and video material?	3	3	4	3	4	4	3	3	3	4	3	3
Are download buttons provided for needed software?	yes	na	na	na	na	na	na	na	na	na	na	na
Appropriate number of clickable items per page?	4	3	4	4	4	3	3	3	3	3	3	3
Are the navigational devices suitable for basic school students?	4	3	4	4	4	4	4	4	4	4	4	4
Are the same design principles used throughout the game site?	4	3	4	4	4	4	4	4	4	4	4	4
Is the appropriate font is used?	4	3	3	3	3	3	3	3	3	4	4	4
Are the colors of the text are resonable and consistent?	4	3	3	3	3	2	3	3	3	4	4	4
Is the quality of illustrations is good?	5	3	3	3	3	3	3	3	3	4	3	4

**Game Site Authenticity**

Are the developers of the site identified?	5	3	4	4	2	2	2	2	2	5	5	5
Is the contact information available for the designer or development team?	5	3	3	3	4	4	4	4	4	5	5	5
Who is the site developed by?(University, government, institution, commercial)	com	com	com	com	com	com	com	com	com	com	com	com
Is there advertising that overpowers or influences the content of the site?	4	4	2	2	2	2	2	2	2	2	2	2

**Game Site Content**

Is the content appropriate for the intended audience?	4	3	3	4	4	3	3	3	3	4	3	4
Is the content accurate and up-to-date?	4	3	3	4	4	4	4	4	4	3	3	3
Is the customization of materials to students possible?	4	2	2	2	2	2	2	2	2	2	2	2
Is the presented material correct in its content?	4	4	3	3	4	4	4	4	4	3	3	3
Is the content of information comprehensible for the intended audience?	4	3	3	4	4	3	3	3	3	4	3	4
Are all the terms well explained?	3	2	2	3	4	2	4	4	4	3	2	3
Is the material of the site applicable without supplementary materials?	4	3	3	3	4	2	3	3	3	4	3	4
Is the material of the site usable in a computerized class?	4	3	4	4	4	4	4	4	4	4	4	4
Is there timely media feedback to students?	4	3	3	4	4	4	3	3	3	3	4	3
Is the target audience of the presented material clear and comprehensible?	4	3	3	3	4	3	3	3	3	5	5	5
Is the front page reasonable and comprehensible?	4	3	3	3	2	2	2	2	2	3	3	3

www.mikstake.com  
Hidden Letters  
www.mikstake.com  
Houses  
www.mikstake.com  
Portrait of a King  
www.mikstake.com  
Substituting  
www.mikstake.com  
The Germ's Job  
www.mikstake.com  
A Matter of Taste  
www.mikstake.com  
The Promise  
brainquest.com  
The Planet Earth Challenge  
brainquest.com  
Presidential Building Blocks  
brainquest.com  
Picture This  
www.learningplanet.com  
Spacey Math

**Game Site Layout and Design**

Is the game site well organized and easy to navigate?	2	2	2	2	2	2	2	2	4	4	4	5
Do all of the links work?	4	4	4	4	4	4	4	4	4	4	4	4
Do the graphics(photos, figures, audio, video) enhance the presentation of information?	2	3	3	3	3	3	3	4	5	5	5	5
Is there fast transfer of picture and video material?	3	3	2	2	2	2	3	4	4	4	4	4
Are download buttons provided for needed software?	na	na	na	na	na	na	na	yes	yes	yes	yes	yes
Appropriate number of clickable items per page?	2	3	3	3	3	3	3	4	4	4	4	4
Are the navigational devices suitable for basic school students?	2	2	2	2	2	3	4	4	4	3	3	4
Are the same design principles used throughout the game site?	4	4	4	4	4	4	4	4	4	4	4	4
Is the appropriate font is used?	3	3	3	3	3	3	4	4	4	4	4	4
Are the colors of the text are resonable and consistent?	3	3	3	3	3	3	4	4	4	4	4	5
Is the quality of illustrations is good?	3	3	3	3	3	3	4	4	4	4	4	5

**Game Site Authenticity**

Are the developers of the site identified?	5	5	5	5	5	5	5	5	2	2	2	5
Is the contact information available for the designer or development team?	5	5	5	5	5	5	5	5	3	3	3	5
Who is the site developed by?(University, government, institution, commercial)	com	com	com	com	com	com	com	com	com	com	com	com
Is there advertising that overpowers or influences the content of the site?	2	2	2	2	2	2	2	2	2	2	2	2

**Game Site Content**

Is the content appropriate for the intended audience?	4	4	4	4	4	3	4	4	4	4	3	4
Is the content accurate and up-to-date?	4	4	4	4	4	2	3	4	4	3	3	4
Is the customization of materials to students possible?	2	2	2	2	2	2	2	2	2	2	3	3
Is the presented material correct in its content?	3	3	3	3	2	1	3	4	4	4	3	4
Is the content of information comprehensible for the intended audience?	1	3	3	3	2	2	4	4	4	3	3	4
Are all the terms well explained?	2	3	3	3	2	2	3	2	2	2	3	2
Is the material of the site applicable without supplementary materials?	3	4	4	4	2	2	4	3	2	2	4	3
Is the material of the site usable in a computerized class?	4	4	4	4	4	4	4	4	4	4	4	4
Is there timely media feedback to students?	2	2	2	2	2	2	3	4	4	4	4	4
Is the target audience of the presented material clear and comprehensible?	5	5	5	5	5	5	5	5	3	3	3	5
Is the front page reasonable and comprehensible?	3	3	3	3	3	3	3	3	4	4	4	5











## Appendix C – Blank Game Scorecard





















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