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AND CONTROLLING THE ACTIONS OF AN
AVATAR IN A VIRTUAL ENVIRONMENT****Publication Classification**(51) **Int. Cl.**
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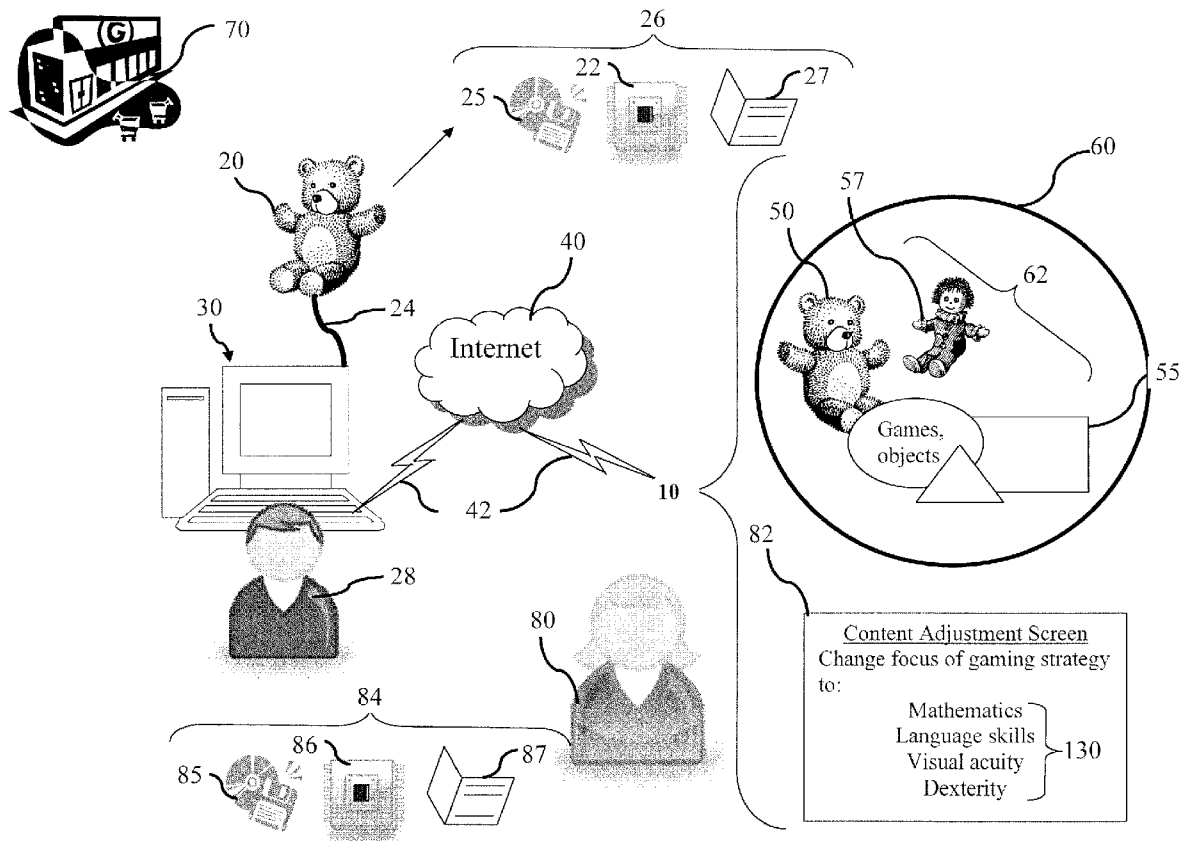
(52) **U.S. Cl.** **463/32**(57) **ABSTRACT**

An Internet-based computer application displayed on a multimedia video display system that records and compiles statistics based upon the interactions of an avatar, representing a gamer, within a virtual environment. The avatar is able to act in the virtual environment by controlling, manipulating, operating, or otherwise interacting with objects and other avatars within the virtual environment. Within the virtual environment, an avatar is presented with pre-determined options controlled by variables set by the computer application for each possible interaction. The actions of the avatar are recorded in at least one database. The application can compile the data and provide summary statistics regarding the avatar's performance within the virtual environment. An interface screen can be used to view the summary statistics and alter the variables to change or adjust the options available to an avatar for interaction with objects in the virtual environment.

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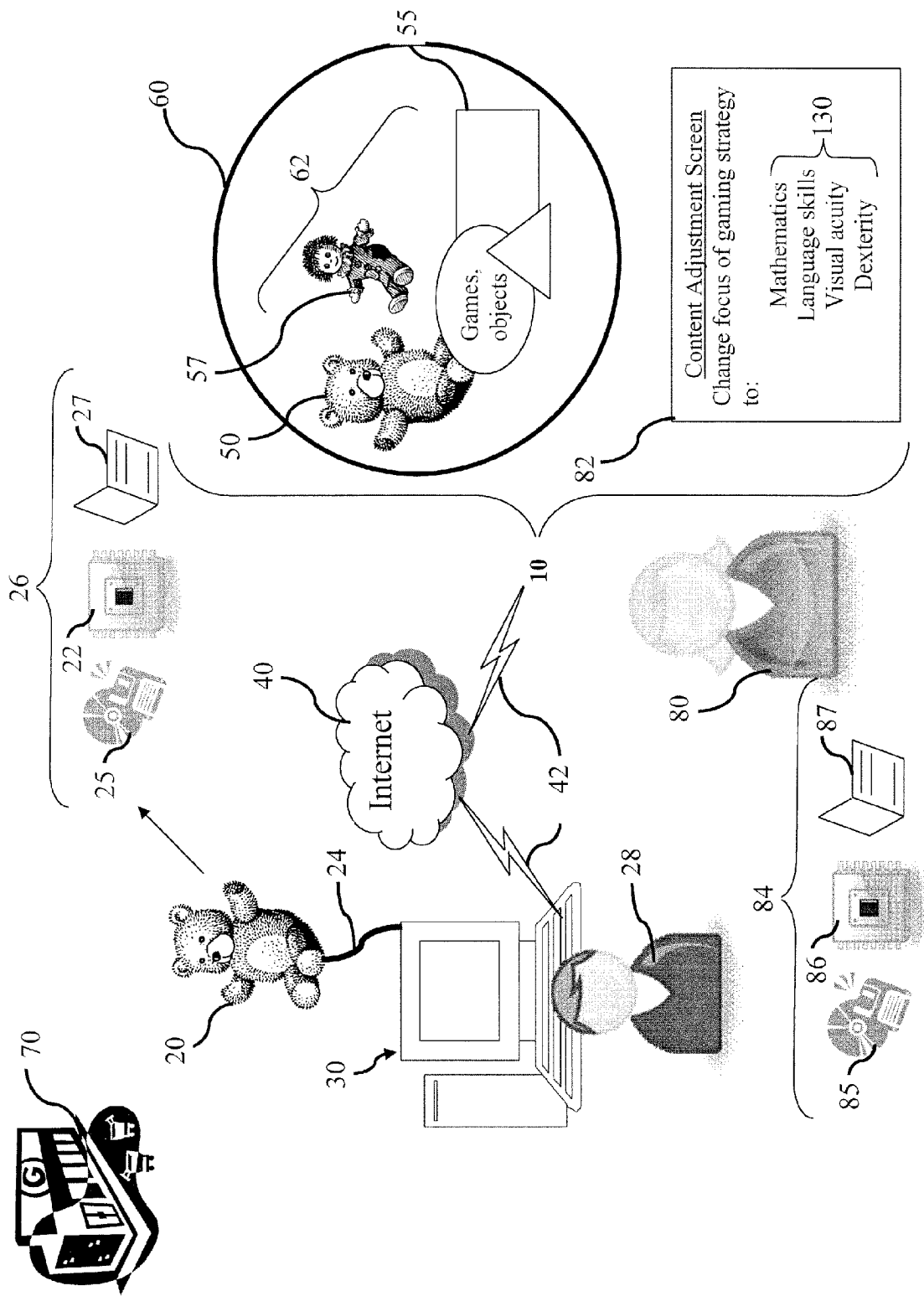


FIG. 1

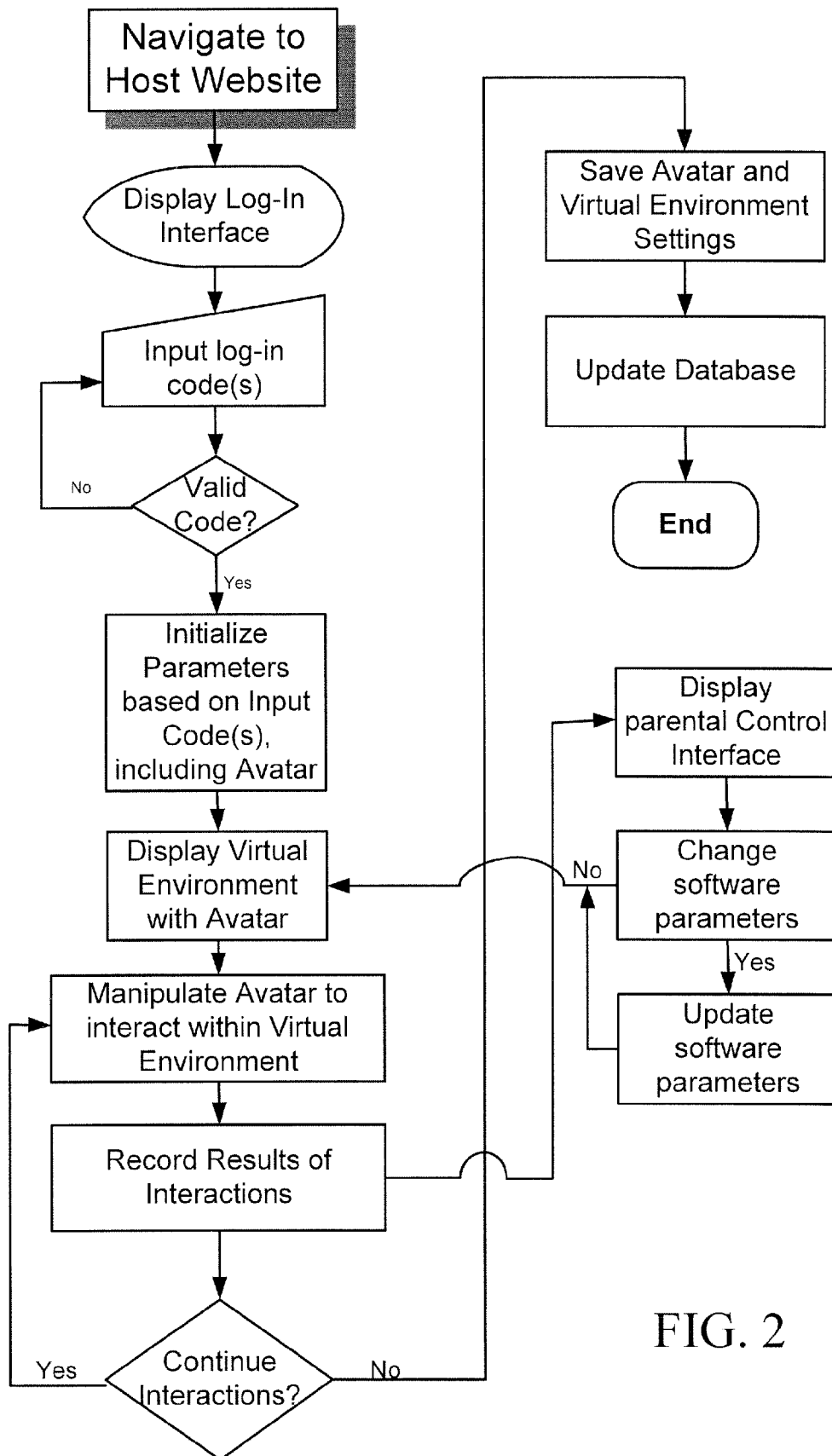


FIG. 2

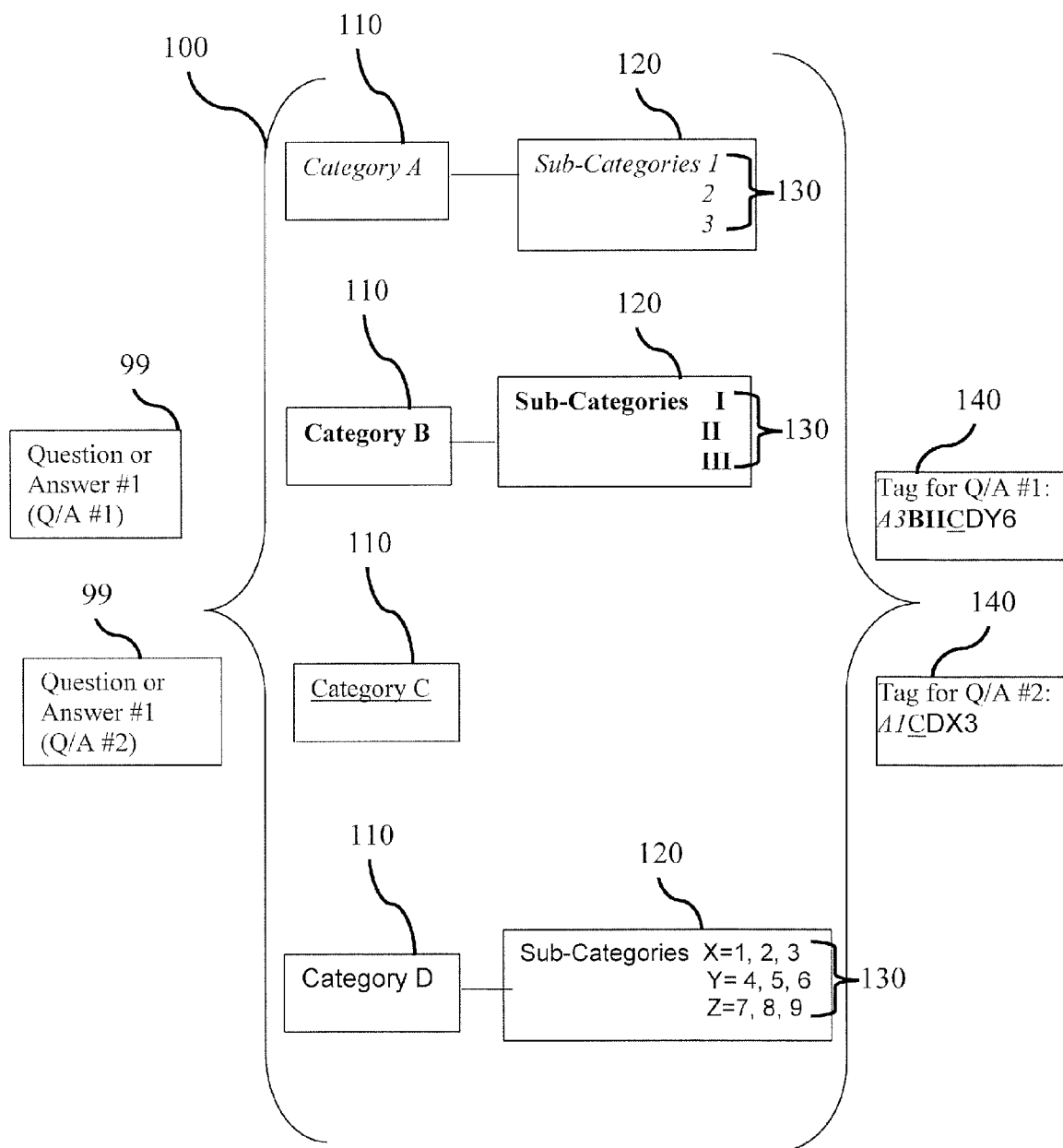


FIG. 3

SYSTEM AND METHODS FOR MONITORING AND CONTROLLING THE ACTIONS OF AN AVATAR IN A VIRTUAL ENVIRONMENT

BACKGROUND OF INVENTION

[0001] Computer and Internet video games are well-known in the art and popular with people around the world. Often referred to as “video gaming” or “gaming”, some video games are designed for a single player or “single gamer” use, but others are designed for participation and interaction between several gamers within a game environment. Internet-based video games are usually hosted by an “Internet-based server application” accessed through a “client” connection through World Wide Web (www.)

[0002] Some of the more popular Internet-based computer application video games are role-playing games that allow gamers to play alone or interact with other gamers within a game environment. Many of these video games utilize a virtual environment or virtual world in which gamers can become immersed in an imaginative experience to participate in a multitude of entertainment options. For example, *Runescape* (Jagex, Ltd.) and WebKinz (Ganz) are on-line Internet-based games comprising virtual environments or virtual worlds in which numerous (gamers can participate to play games, interact with other gamers, and engage in a variety of entertainments by utilizing a “virtual representation” that a gamer can use to navigate within a virtual world.

[0003] As the popularity of video gaming increases, children are becoming more familiar with computers and video gaming at much younger ages. Interestingly, there have been some recent studies that seem to indicate that playing video games can enhance certain mental abilities in children and adults. For example, research from the University of Rochester shows evidence that first-person gaming can enhance visual attention skills (Fuyano, Ichiko, “Brain Craze” *Nature* (2007) 447:18-20). Other studies have shown that video games can increase visual perception and manual dexterity (Readers Digest “The Upside of Video Games” Dec. 11, 2006) and still others imply that certain types of gaming may increase a child’s IQ and cognitive functions (Johnson, Steven “Everything Bad is Good for You: How Today’s Popular Culture is Actually Making us Smarter” Berkley Publishing Group, New York, N.Y. (2005)).

[0004] But, the possible advantages achieved by gaming can be overshadowed by certain perceived disadvantages. Many parents view video games with suspicion because of content considered inappropriate for children, increasing cost of the games and systems, and, in the case of Internet or “on-line” games, contact with unknown or undesirable individuals. Probably the most prevalent complaint is that all video game play is “wasted time” that could be better spent on more productive or educational pursuits.

[0005] To counter such concerns, many games have been designed to incorporate educational content and information. But, most games are directed to a large target audience and any informational and/or educational content often ranges widely in subject matter and interests. Thus, children with particular interests or special educational needs or requirements may not benefit from, or even maintain interest in, an educationally-oriented video game if their skills or knowledge are not matched to those required by the game. And, in many cases, once a gamer has mastered the mental and/or physical skills required to complete or “win” a game, they often lose interest.

[0006] Because of the popularity of gaming with children, there exists a need for parents or other responsible individuals to have more control over the type of content and the interactions that younger gamers experience when playing video games. More particularly, there exists a need for video games that have controllable and/or adjustable educational elements, subject matter, content, information, etc. The ability to adjust or change certain elements or features of video games so that they are appropriate for the age, skill, and knowledge of a gamer can be vital to the continued popularity of a game with children as well as their responsible adults.

[0007] The subject invention provides a client-server, Internet-based computer video game application for which parents or other authorized individuals can control certain actions, content and experiences provided by the video-game during gaming. Further aspects of the system of the subject invention are the ability of the application to record and update data, as well as maintain a database pertaining to a gamer’s experiences and interactions within a computer-generated virtual environment. Advantageously, the application of the subject invention can utilize the information in the database to compile various types of summary statistics pertaining to a gamer’s skills, knowledge level, and other educational factors based upon how they perform within the virtual environment. These summary statistics can provide information to a gamer or other user that can help them make decisions about what type, if any, adjustments should be made to the software parameters to direct the educational and learning experiences within a video game towards more preferred subject matters, skill sets, and interests.

BRIEF SUMMARY

[0008] The subject application provides a system and method for entertainment and education that includes an Internet- or web-based, client-server interactive, computer-generated virtual environment; a computer-generated virtual representation of a game player, or gamer, referred to as an “avatar” within the virtual environment; a toy having physical characteristics similar, or identical to, the avatar; a code associated with the toy that provides access to the virtual environment; a database comprising information obtained pertaining to the interactions of the avatar within the virtual environment; and statistical summaries and information derived from the database information.

[0009] The virtual representation, or “avatar”, is used by a gamer to manipulate objects within the virtual environment. In further embodiments, the avatar is able to interact with other avatars, which can represent other gamers, within the same virtual environment.

[0010] The virtual environment of the subject application can include various graphics, including 3-dimensional images, sounds, animation, live images and/or recorded images for various entertainments and scenarios within the virtual environment. Further, the possible manipulations and interactions of the avatar within the virtual environment are controllable by pre-determined software encoded rules. Thus, for any given object within the virtual environment, an avatar may have at least one, usually two options for manipulating or interacting with that object. Further, interactions between two or more avatars within the virtual environment are also controllable by certain pre-determined application settings. For example, computer-generated conversations between avatars can be conducted using lists of pre-established phrases, words, symbols, etc. from which gamers can select for their

avatar to use when communicating with other avatars. In one embodiment, parents or other users can de-select pre-established phrases, words, symbols that they find inappropriate. This can prevent a gamer from exposure to unsavory, sensitive, or age inappropriate language or phrases.

[0011] The particular advantage of the Internet-based application of the subject invention is its ability to record within a computer-accessible database various types of data and/or information relating to an avatar and how it interacts with the objects and other avatars within the virtual environment. In the client-server system of the subject invention, could be referred to as a “thin-client” application, because in the subject application, data is compiled by a server terminal using the application of the subject invention and presented to a gamer or other user client terminal in a variety of statistical formats, e.g., reports, scores, ratings, comparisons, etc. The computer application can also generate an interface screen wherein a gamer or other user can alter various settings of the application, usually, but not necessarily, relative to the statistical data results, in order to control specific functions of the client terminal. Thus, a gamer or other user can change or adjust the application-encoded, computer-generated options available to an avatar for interaction with objects in the virtual environment.

[0012] In one embodiment, the web-based application of the subject invention comprises a video game wherein an avatar is generated, within a virtual environment, and used by a gamer to manipulate computer-generated objects within the virtual environment. The virtual environment can comprise various games, interactive objects, or objects that the avatar can interact with, visual displays, or any of a variety of other entertainment or education options, including interaction with other avatars, all of which can be encoded by the Internet-based application of the subject invention. Also encoded by the application of the subject invention are one or more options provided to an avatar for interacting with objects and other avatars. Thus, only the visual or audible actions encoded by the application of the subject invention are permissible and will be generated within the virtual environment by a client terminal. More precisely, for any given object or interaction within the virtual environment, there is a limited set of actions that can be taken or responses that can be given by an avatar with regard to that object or interaction. In a further embodiment, each option provided by the application can be rated, labeled, or otherwise categorized according to various parameters.

[0013] As an avatar interacts with objects and other avatars in the virtual environment, the server-side of the application collects data and maintains a database pertaining to the actions and responses chosen by an avatar while in the virtual environment. The collected data can be compiled by any of a variety of statistical or mathematical techniques known to a person with skill in the art.

[0014] The subject web-based application further generates an interface screen on the client-terminal with which the compiled data can be presented and viewed as reports, displays, charts, graphs, scores, comparisons, or a multitude of other summarized statistics. A gamer or other user, such as a parent, or guardian can view the data and/or the various statistics generated by the computer to make decisions about how and whether to adjust the application parameters for interaction within the virtual environment. And, by utilizing various input options on the same or a different interface screen, a gamer or other user can change or adjust the com-

puter-generated options that are made available to an avatar when interacting within the virtual environment.

BRIEF DESCRIPTION OF DRAWINGS

[0015] In order that a more precise understanding of the above recited invention can be obtained, a more particular description of the invention briefly described above will be rendered by reference to specific embodiments thereof that are illustrated in the appended drawings. Understanding that these drawings depict only typical embodiments of the invention and are not therefore to be considered as limiting in scope, the invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

[0016] FIG. 1 is an illustration of the various components that comprise or can be utilized with an embodiment of the system and methods of the subject invention.

[0017] FIG. 2 is a flowchart of the major features of an embodiment of the subject invention.

[0018] FIG. 3 is an illustration of a question and answer database categorization in an embodiment of the subject invention.

DETAILED DISCLOSURE

[0019] The subject application pertains to a software client-server, internet- or web-based application that generates a virtual representation of a game player, or “gamer” within a virtual environment for display on a multimedia video display system. The virtual representation, or “avatar”, is able to manipulate objects within the virtual environment. In further embodiments, the avatar is able to interact with other avatars, which can represent other players, system administrators, or simulated players, within the same virtual environment.

[0020] The manipulations and interactions of the avatar within the virtual environment are controllable by pre-determined application settings or parameters. Thus, for any given object within the virtual environment, an avatar can have at least one option for manipulating or interacting with that object. Further, interactions between two or more avatars within the virtual environment are also controllable by pre-determined encoded settings. In one embodiment of the subject invention, the pre-determined encoded settings provide a limited set of options to an avatar for interaction with an object or other avatar within the virtual environment.

[0021] A server terminal utilizing the application of the subject invention is further able to maintain various types of data pertaining to an avatar and its interactions with the objects and other avatars within the virtual environment. Further, the data can be compiled by the computer with the subject application and presented to a player or other user in a variety of summarized statistical formats. For example, data and statistics pertaining to current scoring for each academic discipline include current level of question difficulty, difficulty escalation, percentage correct for each discipline on prior difficulty levels, how this percentage compares the current difficulty level, subject of highest proficiency, subject of lowest proficiency, bar graphs for each discipline demonstrating the comparative difficulty level/percentage complete, total questions answered, questions answered in each subject area, overall standing compared to other players, and similar reports, scores, ratings, and comparisons. The subject web-based application further generates an interface screen on the client-terminal with which the compiled data can be pre-

sented and viewed as any of a variety of reports, displays, charts, graphs, scores, comparisons, or a multitude of other summarized statistics known to those with skill in the art. Also provided by the subject invention are one or more interface screens that can be used to alter certain settings of the application to alter the functions of a computer, usually, but not necessarily, relative to the summarized statistical data results. Thus, a player or other user can change or adjust the application-encoded options made available to an avatar by a computer for interaction with objects in the virtual environment.

[0022] The term “video display system” as used herein refers to any interactive computer or electronic device that manipulates the video display signal of a display device, such as a television, monitor, screen, or similar equipment, to display the game of the subject invention. In a preferred embodiment, the video display system comprises any of a variety of display devices having Internet access. In a more preferred embodiment, video display system of the subject invention is a personal computer that can access the display via the Internet.

[0023] The term “gamer” as used herein, describes any person utilizing the Internet-based application of the subject invention to interact within the virtual environment described in the subject application.

[0024] The term “parent” refers to a person(s) that has access and/or authorization to view at least one computer-generated interface screen encoded by the Internet-based application of the subject invention and make changes to certain settings using the interface screen to alter the function(s) of the computer, as will be described.

[0025] The term “application”, “Internet-application” or “web-based application” as used herein, describes an application whereby a client server obtains access to a web server through a communications network. These terms are used interchangeably for literary convenience and should not be construed as limiting in any way, unless otherwise stated in the subject specification.

[0026] The term “avatar”, as used herein, refers to a virtual representation in a video display. The “avatar” is controllable by a gamer and is, thus, an indirect representation of the gamer. An avatar can comprise any programmable physical or non-physical characteristics, including those of a real physical object. Reference to an “avatar” within the subject specification is an indirect reference to a gamer.

[0027] The term “object” or “virtual object” as used herein, refers to any virtual representation within the virtual environment, other than an “avatar”. This can include any General User Interface Widget (GUI Widget) viewable on the video display device that can be manipulated by an avatar within the virtual environment, as well as, other objects that can be manipulated, operated or controlled, or be otherwise interacted with, by an avatar within the virtual environment. Such manipulations, operations, control, and interactions can include requests for responses from the avatar, including questions, problems, actions, or decisions.

[0028] Also, as used herein, and unless otherwise specifically stated, the terms “operable communication” and “operably connected” mean that the particular elements are connected in such a way that they cooperate to achieve their intended function or functions. The “connection” may be direct, or indirect, physical or remote.

[0029] These terms are used for literary convenience only and should not be construed as limiting in any way.

[0030] The web-based computer application of the subject invention can be stored and executed from a variety of computing devices and configurations. For example, the subject invention can be utilized on hand-held devices, mobile phones, multiprocessor systems, microprocessor-based or programmable consumer electronics, network PCs, mini-computers, mainframe computers and the like, wearable computing or communication devices and any other device capable of both visual display and direct or indirect communication with another device. The invention could also be practiced in distributed computing environments, where tasks are performed by remote processing devices that are linked through a communications network. In such distributed computer environments, program modules can be located in both remote and local memory storage devices. Thus, it should be understood that the invention is preferably incorporated into many types of computing environments, as suggested above.

[0031] In a preferred embodiment, the system of the subject invention is implemented by using a client-side personal computer linked to the Internet, which is used to navigate to a server-side interactive website. In this embodiment, the web-based application can be stored and implemented from one or more web servers. In a further embodiment, data pertaining to an avatar is also stored on a web server. In an alternative embodiment, data pertaining to an avatar is stored by the video display device of a gamer, independent of the website servers.

[0032] The implementation of computer applications utilizing log-in screens is well-known in the art. The application of the subject invention can also be initiated utilizing a log-in sequence. In one embodiment, the log-in sequence requires information readily available or known to a gamer, such as their name, email address, or other information specific, but unique, to each gamer. But, in a preferred embodiment, the subject application is initiated utilizing a log-in sequence that requires proprietary information or at least one proprietary code **26**. In a further embodiment, a gamer **28** can obtain the proprietary code from one or more proprietary sources **70**, such as, for example, a retail outlet, Internet retailer, web-based merchandiser, or other products source. In this embodiment, a unique proprietary code **26** can be assigned to each gamer **28** by a proprietary source **70**.

[0033] In an embodiment of the subject invention, the computer application includes a database comprising a plurality of proprietary codes, each code corresponding to a set of preestablished initialization variables. Utilizing the proprietary code **26** during a log-in sequence will initialize the subject Internet application with an initial set of variables **84** unique to that code **26**. In a further embodiment, the code **26** initiates the parameterization i.e., the generation of an avatar **50**, also unique to that code. As discussed above, an avatar **50** in the subject invention is a virtual representation of a gamer within a virtual environment and controllable by a gamer **28**. Thus, in this embodiment, the settings of the variables **84** can further determine the characteristics of the avatar **50**, as well as, the options available to a gamer **28** for controlling that avatar when interacting, manipulating or controlling objects **55** and communicating with other avatars **57** within the virtual environment. As will be discussed in more detail below, the variables **84** can be adjusted or changed at a future time. But, initial settings for the avatar **50** and variables **84** are established upon log-in with the proprietary code **26**.

[0034] In a preferred embodiment of the subject invention, a proprietary source **70** could provide one or more proprietary

codes 26 available for selection by a gamer 28. In this embodiment, the proprietary source can provide details and information about the characteristics of an avatar 50 and the variable 84 settings that particular codes 26 establish upon initial parameterization of the subject computer application. In this embodiment, a gamer 28 can have the option of selecting a code 26 that will parameterize the computer application of the subject invention with variable settings preferred by a gamer. Again, as will be discussed below, the variable setting can be altered or changed at a future time, but this embodiment provides for initial variable settings chosen by a gamer. Advantageously, this can allow a gamer 28 or other individual to pre-select a code 26 that parameterizes a desired an avatar 50 and settings for the application variables 84.

[0035] With regard to an avatar 50, in one embodiment, the application encoded information can include details such as, for example, shape, size, color, or other physical attributes of the avatar 50. A further embodiment can include such features as styles of motion, sound or voice characteristics, and other visual or audible traits associated with the avatar of a particular code. In a further embodiment, the computer application can encode certain non-physical characteristics such as, for example, personality, habits, skills, opinions, etc. attributed to the avatar. It should be understood that a person with skill in the art and benefit of the subject disclosure would be able to devise a multitude of physical and non-physical traits for an avatar of the subject invention, and such variations are contemplated to be within the scope of the subject invention.

[0036] In a further embodiment, the virtual environment can include options for altering or customizing an avatar or virtual objects associated with the avatar. Thus, in one embodiment, a gamer can change the initial physical characteristics of an avatar or associated objects with various virtual accessories, color options and/or other virtual physical characteristics. In a still further embodiment, a gamer can select alternative non-physical characteristics for an avatar. In a yet further embodiment, a gamer can obtain various points or virtual monetary credits during or because of certain interactions or manipulations within the virtual environment. When sufficient points or virtual credits are obtained, then certain customizations can be made to an avatar or its associated objects.

[0037] In a preferred embodiment, the codes 26 can be associated with one or more physical objects, for example, a toy 20. In this embodiment, the toy 20 can be available separate from the proprietary codes 26. Thus, in this embodiment, a proprietor 70 can provide one or more toys 20 that resemble avatars 50, which can be generated by the Internet-based application of the subject invention. The same, or a different, proprietor can provide the proprietary codes 26 that enable log-in to the Internet-based application of the subject invention. In a yet further preferred embodiment, the codes 26 can have associations with toys 20, such that the avatar 50 generated by the Internet-based application after log-in with a particular code will have visual characteristics that resemble a selected toy 20.

[0038] In a most preferred embodiment of the subject invention, a proprietary code 26 is affixed to a toy 20 that is specifically designed to resemble an avatar 50. When the code 26 is utilized to log-in and initiate the Internet-based application 10 of the subject invention, the avatar 50 resembling the toy 20 will be generated within the virtual environment of the subject application. A code 26 of the subject invention can be affixed to the toy by any of a variety of techniques and

methods. In one embodiment of the subject invention, any of a variety of devices capable of telemetry with a video display device can contain or embody a code of the subject invention. For example, in one embodiment a non-volatile storage device can be utilized, such as an optical, electronic, or magnetic media, for example, compact disks (CD), digital video display disks (DVD), floppy disks, magnetic tapes, radio frequency devices, or other portable storage media 25. The nonvolatile storage media can be encoded with a proprietary code 26 of the subject invention and affixed to a toy by devices and techniques known in the art.

[0039] In an alternative embodiment, a proprietary code according to the subject invention can be encoded on one or more of any of a variety of computer chips 22, which could be safely embedded within the interior of the toy 20. Telemetry between computer chips and video display devices can be achieved by a variety of devices and methods well known in the art, such as, for example, wired or wireless connections. And, it is well within the skill of a person trained in the art to utilize and/or create alternative means for achieving the display of an avatar of the subject invention on a video display device, and such alternatives are contemplated to be within the scope of the subject invention.

[0040] In an alternative embodiment, the proprietary code comprises printed, readable, or otherwise viewable information affixed to the toy, usually at the time of manufacture. In one embodiment, the proprietary code is affixed to a toy by means of a hang-tag. In an alternative embodiment, the proprietary code is affixed to a toy by means of printed card. In a more preferred embodiment, the printed information is affixed to the toy in such a fashion that it cannot be displayed or revealed until the toy is properly obtained from a proprietary source 70. In a specific embodiment, the proprietary code comprises printed information contained on an accessory 27 affixed to the toy 20. Upon obtaining the toy 20 from a proprietary source 70, the accessory can be opened to reveal the at least one proprietary code 26 that permits the log-in necessary to implement the Internet based computer application 10 of the subject invention.

[0041] Because the avatar is a virtual representation of a physical toy, it can be advantageous if changes made to the virtual avatar are translated to the toy. This can provide a sense of continuity between the physical toy and the virtual avatar. This sense of continuity can also provide a variety of marketing and retail options for enhancing the education and/or entertainment value of the toy. Thus, the subject invention includes a method of using the toy and avatar to market accessories for use with the toy that can correspond to similar accessories in the virtual environment. The marketing strategy can also increase interest in the virtual environment, thus promoting more game play.

[0042] Therefore, in one embodiment of the subject invention, accessories can be made available to or obtainable by a gamer for modifying the physical toy so that it can continue to visually correspond in one or more ways with the virtual avatar or features or objects associated with the avatar within the virtual environment. For example, the toy can comprise a doll for which an avatar can be generated within the virtual environment of the subject invention. The virtual environment can provide options by which a gamer can change the clothing of the avatar doll or obtain objects for the avatar doll, e.g. a house, a car, a pet, or other accessories. And, further, a

gamer can obtain, usually by purchasing from a proprietary source, the same or similar clothing choice or accessory for playing with the toy.

[0043] Alternatively, various avatar-related accessories can be made available from proprietary sources. The accessories can have proprietary codes affixed thereto, similar to the toy, as discussed above. The proprietary code on the accessory can be input by a gamer and used by the Internet-based application of the subject invention to modify the avatar so that it appears to have the same virtual accessory in the virtual environment.

[0044] Once log-in is completed, and the initial parameters are set, the architecture of the application of the subject invention generates a virtual environment **60** viewable on a video display device **30**, such as, for example, a computer and monitor. The virtual environment **60** will utilize the initial settings obtained from the at least one proprietary code **84** to establish the variables used by the computer to generate the virtual environment. In addition, the avatar **50** will be generated within the virtual environment. A gamer **28** can then manipulate the avatar **50** and input information, as will be explained below, by any known input device functional with the video display device. For example, keyboards, mice, trackballs, light pens, controllers, joysticks, haptic devices, data gloves, and other devices known in the art can be utilized with different embodiments of the subject invention.

[0045] In one embodiment, the virtual environment is designed as an interactive entertainment system comprising any of a variety of tasks, games, projects, questions, or any other interactive experiences. In this embodiment, at least one interactive experience requires a gamer to input information with an input device operably connected to the video display system. In a specific embodiment, a gamer is presented with a question or task requiring a decision to be made and input by the gamer. In a further embodiment, the subject invention presents, utilizing the established variables, a finite number of possible decisions that can be made in response to a question or task.

[0046] The subject Internet-based application utilizes a pre-established database of questions/answers **99** from which the server computer utilizing the subject application and established variables can select during a game session. Advantageously, the subject application utilizes categorization and labeling of each question and each answer within the database according to one or more systems of classification **100**. For example, in one embodiment, each question is grouped into at least one category **110**. But, in a more preferred embodiment, each question is grouped into at least two or more categories or even subcategories **120**. Thus, in this embodiment each question will be in at least two categories and possibly one or more sub-categories. Further embodiments, can utilize a plurality of categories or subcategories to group questions and answers. For example, questions can be categorized according to subject matter, academic discipline, grade level, and/or difficulty level. The categorization system of the subject invention ensures that each possible question within the question/answer database **99** and selectable by a computer utilizing the Internet-based application of the subject invention is classified into all appropriate categories and subcategories. For example, a mathematical word problem can be categorized into a mathematics category and an algebra subcategory, as well as a reading category and a reading level subcategory.

[0047] A similar method of categorization can be applied to each possible answer presented for the question. Thus, each possible answer can be categorized into one or more categories or sub-categories. In one embodiment, the correct answer to a particular question is categorized similar to or exactly as the question. In this embodiment, only one correct answer is associated with a particular question in the database. However, in an alternative embodiment, each question has associated with it two or more correct answers in different formats. So, using the above example, a mathematical word question can have a first possible correct answer presented as mathematical notation and a second possible correct answer presented as a written description. This embodiment allows possible correct answers to also be selected by the computer application parameters based upon their categorization.

[0048] In a further embodiment, each category **110** and subcategory **120** of the system of classification **100** is assigned a unique identifier or label **130**. The label **130** for each category and subcategory are then used to assign a tag **140** to each question or answer within the database. Using the tag **140** assigned to each question or each answer, a computer can select questions and appropriate answers during a game session based upon the parameters set within the application, as discussed above.

[0049] During game play, an avatar **50** will be presented within the virtual environment **60**, being displayed on a video display device **30**, with an appropriate question/answer **99** combination. In one embodiment, at least two answers are presented to choose from, one of them being the correct, or most correct, answer to the question. A gamer **28**, using an avatar **50** within the virtual environment **60** can determine the correct, or most correct, answer to a question and input that answer with the I/O device operably connected to the video display device **30**.

[0050] In a further advantageous embodiment of the subject invention, once an answer is input by the gamer, the computer records and saves the answer in a separate database. Thus, during a game play session, an avatar's **50** answers and/or responses to various questions or tasks presented within the virtual environment are recorded by the Internet-based computer application of the subject invention. In a further embodiment, the computer can record and save correct and incorrect answers, as well as maintain information about the various categories of the answers presented to, and selected by, an avatar.

[0051] Utilizing statistical methods and techniques known in the art, each question and answer database compiled during one or more game sessions can be reviewed and analyzed by a computer using the application of the subject invention. In a further embodiment, a computer of subject application can utilize the tags **140** associated with each question and each answer to generate a plurality of summarized statistics regarding the gamer/avatar's experiences, knowledge, skills, and other information based upon the questions presented and the answers provided. A person with skill in the art will readily recognize various types of questions and answers that are appropriate for the multitude of uses for which the Internet-based computer application of the subject invention can be utilized. By way of non-limiting examples, the Internet-based application of the subject invention can provide statistics pertaining to current scoring for each academic discipline, current level of question difficulty, difficulty escalation, percentage correct for each discipline on prior difficulty levels, how this percentage compares the current difficulty level,

subject of highest proficiency, subject of lowest proficiency, bar graphs for each discipline demonstrating the comparative difficulty level/percentage complete, total questions answered, questions answered in each subject area, overall standing compared to other players, and similar reports, scores, ratings, and comparisons. Further non-limiting examples of statistical information include player difficulty level, percentage correct on each attempted difficulty level, percentage of improvement, comparative standings with regard to other gamers, standing in age range, and similar gamer specific information. This information can be presented and viewed as any of a variety of reports, displays, charts, graphs, scores, comparisons, or a multitude of other summarized statistics known to those with skill in the art.

[0052] In a further representative, but non-limiting example, questions can be categorized and/or subcategorized by subject matter, such as mathematics, language, music, science, etc. Further, each question can have two or more answers with one being the correct answer. In a further embodiment, each question could have several answers with, perhaps, two of them being correct answers, but each correct answer requiring a different level of understanding of the principle behind the question. Analyzing the question and the answer provided can, for example, indicate a gamer's level of understanding in a particular subject matter.

[0053] As discussed above, a computer utilizing the Internet-based application of the subject invention can be initially parameterized utilizing settings encoded by the proprietary code(s) 26. However, a further embodiment of the subject application provides for a means to alter, either permanently or temporarily, the parameters at any time before, during or after a game play session. In this embodiment, one or more interface techniques can be used to change the computer settings. For example, in one embodiment, utilizing a keyboard and certain pre-established key strokes, a gamer or parent 80 can input information regarding desired changes to the computer parameters. In a further embodiment, there can be one or more objects within the virtual environment that when manipulated by an avatar 50 can make changes to the computer settings.

[0054] In a preferred embodiment, the application of the subject invention encodes one or more computer control interfaces 82. In this embodiment, the computer control interface 82 can be one or more interface screens that can be displayed on the video display device. In a further embodiment, display of the computer control interface 82 can be initiated by various selection methods known in the art, including, but not limited to, icon selection, keyboard input, and other techniques known in the art.

[0055] In a still further embodiment, the computer control interface 82 can be accessed by implementing a combination of icon selection and keyboard input. In this embodiment, a parent can select an icon that initiates a log-in screen where one or more codes or commands can be input. Once the commands or codes are input, the computer control interface 82 is displayed. In a further embodiment, at least one code can be provided to a parent 80 by a proprietary source 70. The parental code 84 can be located on the same media or a different media as the proprietary code 26. For example, there can be a separate disk 85 or accessory 87 containing the parent code 84. Alternatively, as is known in the art, the log-in screen may provide the option for a parent 80 to establish their own parent code 26.

[0056] The computer control interface 82 display can comprise a variety of information and control options, also referred to a General User Interface Widgets (GUI widgets). In one embodiment, the computer control interface 82 can display the initial parameters of the computer, prior to a game session or at initial log-in. In a further embodiment, the computer control interface 82 can display the computer parameters, as well as various summarized statistics regarding the questions and answers previously presented during one or more game sessions. A person with skill in the art and benefit of the subject application will be able to determine any of a variety of summary statistics that can be generated from the question and answer databases described herein by a computer utilizing the application of the subject invention and displayed on the computer control interface 82 and such variations are contemplated to be within the scope of the subject invention.

[0057] Thus, one advantage of the application of the subject invention is the compilation and display of the above-described summary statistics. A further advantage of the subject invention is the ability of a gamer or parent to alter the criteria by which the computer selects questions and/or answers to be used during gaming by using any of a variety of GUI widgets on a computer control interface 82. Thus, a gamer or parent can make use of the summary statistics to determine how or whether to adjust certain parameters by which the computer operates. This permits parental control over the type of information, tasks, and other experiences that can be encountered by a gamer within the virtual environment of the subject invention. This also permits the operations of the computer to be altered as the skills, knowledge and interests of a gamer change and develop in response to game play. Thus, a parent can adjust computer parameters to select or "lock-out" subject matter and/or skill level material as appropriate or inappropriate for a particular gamer.

[0058] Following is an example that illustrates procedures for practicing the subject invention. This example is provided for the purpose of illustration only and should not be construed as limiting. Thus, any and all variations that become evident as a result of the teachings herein or from the following examples are contemplated to be within the scope of the present invention.

EXAMPLE 1

Automobile Toy and Associated Avatar

[0059] A toy in the shape of an automobile is packaged with a proprietary code and a parental code. The packaging includes a description of the skills and abilities associated with that toy. Upon purchase, the package can be opened providing a gamer and/or parent access to the codes, as well as an internet address for accessing a website and virtual environment to be used with the codes.

[0060] Utilizing the Internet to navigate to a specified website, the gamer utilizing a computer can log-in to the website using the proprietary code. Upon log-in, the proprietary code triggers the server terminal to generate an avatar, in the shape and configuration of the toy automobile, within a virtual environment that is displayed on the client/gamer terminal. The skills and abilities list on the original toy packaging correlate to the initial computer parameters that will be set when the log-in code is input at the website to the server terminal. Thus, the proprietary log-in code will initiate certain start-up computer parameters that will be utilized within

the computer-generated virtual environment. For example, the proprietary log-in code can establish computer parameters that initially present questions at a particular grade level (1st grade, 2nd grade, 3rd grade, etc.) and subject matter (mathematics, language, science, health, etc.)

[0061] The server terminal is able to select from a database of questions and answers for presentation during a game session. Each question and answer within the database has been categorized into one or more categories and a tag associated therewith that correlates to the question categories and sub-categories, as shown, for example, in FIG. 3. The tag associated with each question can be interpreted by a computer utilizing the Internet-based application of the subject invention. Following the above example, the grade levels can be categories such as 1st grade=A, 2nd grade=B, 3rd grade=C, etc. and subject matter can be categorized as mathematics=1, language=2, science=3, health=4, etc. Then, the computer, utilizing its established parameters can search the database using the tags to select questions or information for presentation to a gamer during interaction within the virtual environment. For example, rising the above categories, the computer can be parameterized to select 3rd grade level mathematics questions, which will cause the computer to search within the database for questions and answers having the tag "C1".

[0062] As a gamer utilizes the avatar to navigate in the virtual environment, the avatar can manipulate and interact with objects within the virtual environment. As the gamer interacts with the virtual environment, the Internet-based computer application will present the avatar with interactive opportunities that can include games, skill tests, questions, and other types of entertainment. Usually, one or more of the interactive opportunities can involve a question or a skill that requires selection of at least one answer. Using the established parameters, the computer can present an appropriate question. The decisions and choices made by the avatar i.e., the gamer, in response to that question are recorded and saved into another database by the Internet-based computer application. The application can record any of a variety of information about each interaction, including, but not limited to, correct and incorrect answers, number of selections made, time elapsed for each answer, category of the question and answer, level of improvement over time, and other statistics.

[0063] At any point during a game session, a parent can activate a parental control interface by using the parental code that was provided with the toy. The parental control interface is generally a webpage providing a visual display of information pertaining to the current computer parameters and certain summary statistics related to the gamer's interactions. For example, using the above categories, a parent could see that the computer is parameterized to most-often select 3rd grade mathematics questions and that the gamer has achieved 80% proficiency in answering questions, but, perhaps, only 65% proficiency on word-related problems.

[0064] The parental control interface can have one or more selection mechanisms, commonly referred to as Graphical User Interface Widgets (GUI Widgets), such as, for example, slide-bars, check boxes, radio buttons, toggle buttons, drop-down screens, and other techniques known in the art, by which a parent can change various settings of the software. By making use of the summary statistics, a parent can, if desired, make adjustments or changes to the software parameters. In the above example, a parent could maintain the 3rd grade mathematics level, but increase the language settings so that

more word-related questions are presented, allowing a gamer to develop more proficiency in that area.

[0065] The Internet-based computer application of the subject invention gives a parent greater control over the content, type of information, educational benefits and interactions that a gamer can have within the virtual environment.

[0066] All patents, patent applications, provisional applications, and publications referred to or cited herein are incorporated by reference in their entirety, including all figures and tables, to the extent they are not inconsistent with the explicit teachings of this specification.

[0067] The invention has been described herein in considerable detail, in order to comply with the Patent Statutes and to provide those skilled in the art with information needed to apply the novel principles, and to construct and use such specialized components as are required. However, it is to be understood that the invention can be carried out by specifically different equipment and devices, and that various modification, both as to equipment details and operating procedures can be effected without departing from the scope of the invention itself. Further, it should be understood that, although the present invention has been described with reference to specific details of certain embodiments thereof, it is not intended that such details should be regarded as limitations upon the scope of the invention except as and to the extent that they are included in the accompanying claims.

[0068] Further, in the claims that follow, the steps have been ordered for typographical and literary convenience and are not intended to imply any particular order other than that specifically set forth in the subject specification or understood to be necessary by one of ordinary skill in the art.

1. An Internet-based computer application on a storage medium that, when executed, instructs one or more processors to:

establish parameters for the operation of the application on a video display system;

display on the video display system a virtual environment observable by at least one user, said virtual environment comprising;

at least one avatar controllable by the at least one user;

at least one object within the virtual environment that the avatar can interact with or manipulate according to at least one computer-selected action, as determined by the established parameters, wherein the object and the computer-selected action have associated therewith at least one tag corresponding to one or more object or action categories or subcategories;

record within a database the tag associated with each object encountered by an avatar and each response or action taken by the avatar with regard to the object in the virtual environment;

compile the data within the database; and

display on a video display system a control interface comprising,

at least one the established parameters,

at least one statistical result from the compiled data, and

at least one selection mechanism capable of changing the at least one established parameter.

2. The computer application, according to claim 1, further comprising at least one proprietary code that initiates the transmission of instructions to the processor from the computer application.

3. The computer application, according to claim 1, further comprising at least one proprietary code that instructs the processor to display the control interface.

4. The computer application, according to claim 1, wherein the video display system is a computer connected to the Internet.

5. The computer application, according to claim 1, wherein the storage medium is at least one Internet accessible web server.

6. The computer application, according to claim 1, wherein the proprietary code is printed on a tag attached to the toy or its packaging.

7. The computer application, according to claim 1, wherein the at least one statistical results comprises: scoring for each academic discipline, level of question difficulty, difficulty escalation over time, percentage correct for each discipline on prior difficulty levels, comparison of percentage correct to discipline difficulty level, subject of highest proficiency, subject of lowest proficiency, comparative difficulty level/percentage complete, total questions answered, questions answered in each subject area, overall standing compared to other players, discipline difficulty level, percentage correct on each attempted difficulty level, percentage of improvement, comparative standings with other gamers, or standing in age range.

8. An entertainment system comprising:

at least one toy;

at least one proprietary code associated with the toy;

at least one video display device connected to a communication network; and

a computer application stored on at least one server and accessible by the video display device through the communication network, that when executed by the proprietary code received through the communication network from the video display device, will,

establish parameters for the operation by a user of the computer application on the video display device;

display on the video display device a virtual environment comprising;

at least one avatar controllable by the at least one user; and

at least one object within the virtual environment that the avatar can interact with or manipulate according to at least one computer-selected action, as determined by the established parameters, wherein the object and the computer-selected action have associated therewith at least one tag corresponding to one or more object or action categories or subcategories;

record within a database the tag associated with each object encountered by an avatar and each response or action taken by the avatar with regard to said object in the virtual environment;

compile the data in the database; and

display on a video display system a control interface comprising,

at least one of the established parameters,

at least one statistical result of the compiled data, and

at least one selection mechanism capable of changing the at least one established parameter.

9. The entertainment system of claim 8, wherein the toy and the avatar have the same or similar appearance.

10. The entertainment system of claim 8, wherein the proprietary code comprises printed information affixed to the toy.

11. The entertainment system of claim 10, wherein the printed information is contained on a hang tag attached to the toy.

12. The entertainment system of claim 8, wherein the at least one video display device is a computer connected to the Internet.

13. The entertainment system according to claim 8, wherein the at least one statistical result comprises: scoring for each academic discipline, level of question difficulty, difficulty escalation over time percentage correct for each discipline on prior difficulty levels, comparison of percentage correct to discipline difficulty level, subject of highest proficiency, subject of lowest proficiency, comparative difficulty level/percentage complete, total questions answered, questions answered in each subject area, overall standing compared to other players, discipline difficulty level, percentage correct on each attempted difficulty level, percentage of improvement, comparative standings with other gamers, or standing in age range.

14. A method for presenting an Internet-based virtual world to a user for entertainment and education, said method comprising,

obtaining a toy having associated therewith at least one proprietary code,

utilizing a video display system having connection to the Internet to access a web server containing thereon a computer application for instructing one or more processors to generate a virtual world viewable on the video display device; and

inputting the at least one proprietary code, through the Internet connection, to the web server to initiate instruction of the one or more processors to,

display on the video display system the virtual world observable by at least one user, said virtual world comprising:

at least one avatar controlled by the at least one user; and

at least one object within the virtual environment that the avatar can interact with or manipulate according to at least one computer-selected action as determined by the established parameters, wherein the object and the computer-selected action have associated therewith at least one tag corresponding to one or more object or action categories or subcategories;

record data within a database relating to each action of the avatar with regard to at least one object in the virtual environment;

compile the data;

display on the video display system a control interface comprising,

at least one established parameter,

at least one statistical result of the compiled data, and at least one selection mechanism capable of changing at least one established parameter.

15. The method, according to claim 14, further comprising at least one proprietary code for instructing the processor to display the control interface.

16. The method, according to claim 14, wherein the video display system is a personal computer.

17. The method, according to claim 14, wherein the results obtained from compiling data recorded in the database comprise: scoring for each academic discipline, level of question difficulty, difficulty escalation over time, percentage correct

for each discipline on prior difficulty levels, comparison of percentage correct to discipline difficulty level, subject of highest proficiency, subject of lowest proficiency, comparative difficulty level/percentage complete, total questions answered, questions answered in each subject area, overall standing compared to other players, discipline difficulty level, percentage correct on each attempted difficulty level, percentage of improvement, comparative standings with other gamers, or standing in age range.

18. A method for obtaining and presenting statistical information pertaining to the virtual actions of an avatar in response to virtual objects within a virtual environment, said method comprising:

categorizing each object within the virtual environment into at least one object category;

labeling each object with a tag representing the at least one object category;

categorizing each possible action of the avatar relative to each object within the virtual environment into at least one action category;

labeling each possible action with a tag representing the at least one action category;

recording within a database the respective tag of each object encountered by an avatar and each action selected by the avatar for responding to the object;

compiling the data within the database to obtain statistical information; and

presenting the results of the compiled data on the video display device.

19. The method, according to claim **18**, further comprising at least one subcategory for labeling at least one object with a tag.

20. The method, according to claim **18**, further comprising at least one subcategory for labeling at least one action with a tag.

21. The method, according to claim **18**, wherein the results obtained from compiling data recorded in the database comprise: scoring for each academic discipline, level of question difficulty, difficulty escalation over time, percentage correct for each discipline on prior difficulty levels, comparison of percentage correct to discipline difficulty level, subject of highest proficiency, subject of lowest proficiency, comparative difficulty level/percentage complete, total questions answered, questions answered in each subject area, overall standing compared to other players, discipline difficulty level, percentage correct on each attempted difficulty level, percentage of improvement, comparative standings with other gamers, or standing in age range.

22. The method, according to claim **18**, wherein the compiled data comprises information pertaining to current level of question difficulty, difficulty escalation, percentage correct for each discipline on prior difficulty levels, comparison of performance between current and past difficulty levels, subject of highest proficiency, subject of lowest proficiency, comparative difficulty level/percentage complete, total questions answered, questions answered in each subject area, and overall standing compared to other gamers.

23. The method, according to claim **22**, wherein the compiled data is presented in the form of graphical reports, scores, ratings, and comparisons viewable by the video display device.

24. The method, according to claim **18**, further comprising a control interface for displaying the statistical results.

25. The method, according to claim **18**, wherein object categories are selected from the group consisting of: subject matter, academic discipline, grade level, and difficulty level.

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