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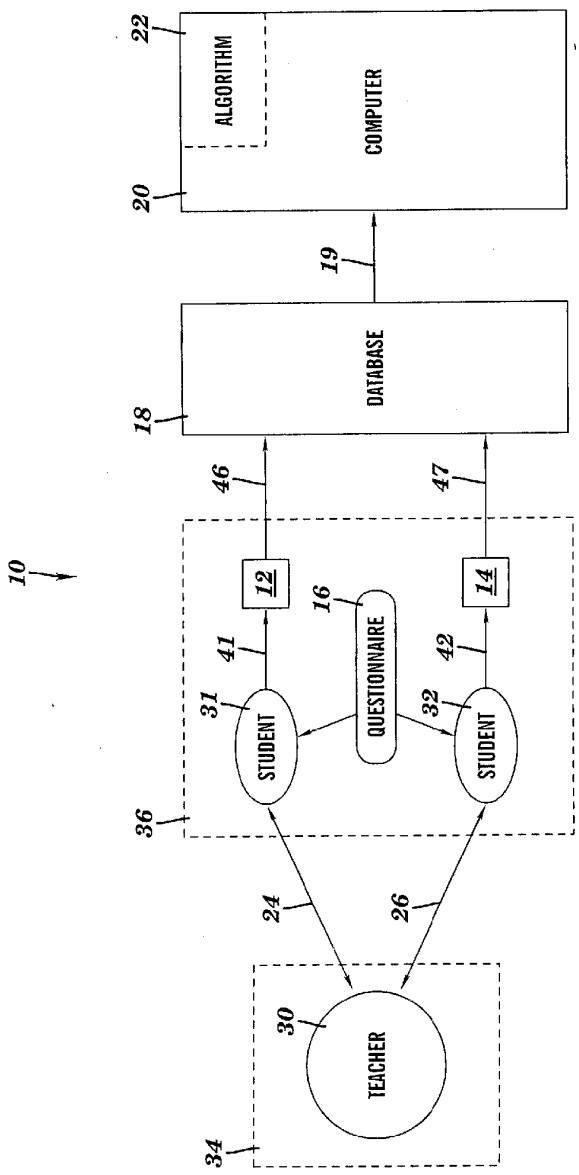
ELECTRONIC COURSE EVALUATION

Abstract of the Disclosure

A method, apparatus, questionnaire, and system for evaluating student(s), teacher(s), and a course(s). A participant enters data into a device. A participant is a student or a teacher. The data reflect a response by the participant to at least one item that is presented to the participant. The at least one item relates to at least one session of the course. The at least one session is taught to the participant by a teacher. The data may include teacher data relating to the teacher(s), student data relating to the student(s), course data relating to the course(s), or combinations thereof.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22
ALGORITHM
COMPUTER
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DATABASE
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QUESTIONNAIRE
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STUDENT
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TEACHER
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FIG. 1

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COMPLETE SPECIFICATION

FOR A STANDARD PATENT

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Invention Title:	Electronic Course Evaluation

The following statement is a full description of this invention, including the best method of performing it known to me/us:-

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ELECTRONIC COURSE EVALUATION

Background

1. Technical Field

The present invention relates to course data and electronic processing thereof.

2. Related Art

Evaluation of a course, its teacher, and its students is important for facilitating improvement of future instances of the course and for facilitating improvement of teacher and/or student effectiveness. Unfortunately, the processing of such an evaluation is typically inefficient, which limits the benefits that may be obtained from the such an evaluation. Accordingly, there is a need for an efficient processing of an evaluation of a course, its students and its teacher.

Summary

An aspect of the present invention provides an evaluation method, comprising: entering data by a dynamic participant into an electronic device, wherein the data reflect a response by the dynamic participant to at least one item of a questionnaire that is presented to the dynamic participant, wherein the at least one item relates to at least one session, wherein the at least one session is taught by a teacher of a course, wherein the data reflecting the response by the dynamic participant are selected from the group consisting of teacher data relating to the teacher, student data relating to a student of the course, course data relating to the course, and combinations thereof, and wherein the dynamic participant is selected from the group consisting of the student and the teacher; and analyzing the data using a computer algorithm to determine an effective performance of the dynamic participant and elements with which the dynamic participant interacts.

Another aspect of the present invention provides an apparatus, comprising: an electronic device adapted to have data entered therein by a dynamic participant, wherein the data reflect a response by the dynamic participant to at least one item of a questionnaire that is presented to the dynamic participant, wherein the at least one item relates to at least one session, wherein the at least one session is taught by a teacher of a course, wherein the data reflecting the response by the dynamic participant are selected from the group consisting of teacher data relating to the teacher, student data relating to a student of the course, course data relating to the course, and combinations thereof, and

wherein the dynamic participant is selected from the group consisting of the student and the teacher; and means for analyzing the data using a computer algorithm to determine an effective performance of the dynamic participant and elements with which the dynamic participant interacts.

Another aspect of the present invention provides an evaluation questionnaire, comprising: at least one item executable with an electronic device, wherein the at least one item comprises computer executable data, wherein the electronic device is adapted to have data entered therein by a dynamic participant, wherein the data reflect a response by the dynamic participant to the at least one item, wherein the at least one item provokes a response by the dynamic participant to an aspect of at least one session of a course, wherein the data are selected from the group consisting of teacher data relating to the teacher, student data relating to a student of the course, course data relating to the course, and combinations thereof, and wherein the dynamic participant is selected from the group consisting of the student and the teacher.

Another aspect of the present invention provides a course, comprising: at least one session of the course, wherein the course is adapted to have data entered by a dynamic participant into an electronic device, wherein the data is computer readable, wherein the data reflect a response by the dynamic participant to at least one item that is presented to the dynamic participant, wherein the at least one item relates to at the least one session, wherein the data reflecting the response by the dynamic participant are selected from the group consisting of teacher data relating to a teacher, student data relating to a student of the course, course data relating to the course, and combinations thereof, and wherein the dynamic participant is selected from the group consisting of the student and the teacher.

Another aspect of the present invention provides a data transmission method, comprising: transmitting data from an electronic device to an entity selected from the group consisting of a database, a computer, and combinations thereof, wherein the data has been entered into the electronic device by a dynamic participant, wherein the data reflect a response by the dynamic participant to at least one item that is presented to the dynamic participant, wherein the at least one item relates to at least one session, wherein the at least one session is taught by a teacher of a course, wherein the data are selected from the group consisting of teacher data relating to the teacher, student data relating to a student of the course, course data relating to the course, and combinations thereof, and

wherein the dynamic participant is selected from the group consisting of the student and the teacher.

Another aspect of the present invention provides an evaluation system, comprising: a dynamic participant; an electronic device adapted to have data entered therein by the dynamic participant; a questionnaire constituting at least one item executable with the electronic device, wherein the at least one item provokes a response by the dynamic participant to an aspect of at least one session of a course; a database, said database adapted to receive data transmitted thereto from the electronic device; and a computer usable medium having a computer readable program code embodied therein, wherein the computer readable program code comprises an algorithm adapted to be executed on a computer so as to statistically analyse aggregate data; wherein the data are selected from the group consisting of teacher data relating to the teacher student data relating to a student of the course, course data relating to the course, and combinations thereof, the statistical analysis of the aggregate data facilitating a determination of an effective performance of the dynamic participant and elements with which the dynamic participant interacts.

Another aspect of the present invention provides a computer program product, comprising: a computer usable medium having a computer readable program code embodied therein, wherein the computer readable program code comprises an algorithm adapted to be executed on a computer so as to statistically analyze aggregate data facilitating a determination of an effective performance of a dynamic participant and elements with which the dynamic participant interacts, wherein the aggregate data comprise data entered by a plurality of dynamic participants or a single dynamic participant a plurality of instances into at least one electronic device, wherein the data reflect a response by the plurality of dynamic participants or the single dynamic participant to at least one item that is presented to the plurality of dynamic participants or the single dynamic participant, wherein the at least one item relates to at least one session of a course, wherein the at least one session is taught by a teacher of the course, wherein the data are selected from the group consisting of dynamic participant data relating to the plurality of dynamic participants or the single dynamic participant, course data relating to the course, and combinations thereof, and wherein each dynamic participant of the plurality of dynamic participants or the single dynamic participant is selected from the group consisting of the teacher and a student of the course.

Embodiments of the present invention provide an efficient processing of an evaluation of a course, its teacher(s), and its student(s).

Brief Description of the Drawings

FIG. 1 depicts a system for evaluating a course, said system comprising a device, a questionnaire, a database, and a computer, in accordance with embodiments of the present invention.

FIG. 2 depicts the system of FIG.1 with the questionnaire encoded within the device, in accordance with embodiments of the present invention.

FIG. 3 depicts the system of FIG. 2 without the database, in accordance with embodiments of the present invention.

FIG. 4 depicts a timeline for the system of FIG. 1, 2, or 3, in accordance with embodiments of the present invention.

FIG. 5 depicts a sample questionnaire for use with the system of FIG. 1, 2, or 3, in accordance with embodiments of the present invention.

FIG. 6 depicts a response to the sample questionnaire of FIG. 6, in accordance with

[THE NEXT PAGE IS PAGE 6]

embodiments of the present invention.

FIG. 7 depicts the response of FIG. 6 encoded in a file record, in accordance with embodiments of the present invention.

FIG. 8 depicts an illustrative questionnaire for use with the system of FIG. 1, 2, or 3, in accordance with embodiments of the present invention.

FIG. 9 depicts a computer system for evaluating a course, in accordance with embodiments of the present invention.

Detailed Description of the Invention

The present invention makes use of the terms "learn", "student", "teacher" and "device." To learn comprises varying either consciously or unconsciously one's response to a given stimulus. A student comprises a living organism that can potentially learn. A teacher comprises any organism or thing that participates in a student's learning. A device comprises a transmission or recording device (or both). The device may be an analog device or a digital device. The device may be a miniature device (e.g., a miniature analog device or a miniature digital device). A miniature device is a device that is small enough to be hand-held when being used. An example of a miniature device is a personal digital assistant (PDA) as is known in the art. An example of a PDA is a Palm Pilot. The scope of the present invention includes any miniature device and any PDA. Other devices may include, *inter alia*, a computer, a workstation, a portable device (e.g., a laptop device or a miniature device); individual sensing device (i.e., a sensing device that is capable of sensing responses or other activity by one or more participants

in a course or in any other context); clothing or a device embedded therein; accessories (e.g., eyeglass frames, necktie, hearing aid, watch, etc.); etc. The device may or may not have memory capabilities. The memory capabilities, if present, may be volatile, non-volatile, or both. The device may or may not use some or all of the memory capabilities for any given application.

FIG. 1 depicts a system **10** for evaluating a course, said system **10** comprising devices **12** and **14**, a questionnaire **16**, a database **18**, and a computer **20**, in accordance with embodiments of the present invention. The computer **20** has a stored algorithm **22** embodied in software code. The course includes a teacher **30** and students **31** and **32**. Although FIG. 1 shows one teacher (i.e., the teacher **30**), the course and each session thereof may generally include any number of teachers. Although FIG. 1 shows two students (i.e., the students **31** and **32**) the course and each session thereof may generally include any number of students and as few as one student.

The course is divided into sessions and each session may include, *inter alia*, a module of subject matter or subject activity. A session may have a fixed duration (e.g., 30 minutes, one hour, two hours, etc.) and a session may comprise any structured learning environment having at least one teacher and at least one student. Alternatively, the session may have a variable duration. The learning environment ranges from a highly structured learning environment (e.g., a formal lecture or a traditional classroom) to a loosely structured learning environment (e.g., as in a personal tutoring or counseling session or in a creative brainstorming session). Other examples of a learning environment associated with a session of a course may comprise, *inter alia*, a seminar, a sermon, a training session (e.g., football training or basic training in the army), a practicum (i.e., learning by doing), etc.

The learning by the students **31** and **32** in a session of the course may be of any type of learning such as, *inter alia*, learning traditional subject matter (e.g., mathematics, writing, science, history, geography, etc.), learning practical arts (glass blowing, carpentry, sewing, etc.), learning about interpersonal relationships (e.g., gaining an understanding of the psychology of human interactions and communication), introspective learning (e.g., a student acquires knowledge or an understanding of aspects of himself or herself), paranormal learning (e.g., improving extrasensory perception such as telepathy, clairvoyance, precognition, etc.), improving self-control (e.g., developing good habits, unlearning bad habits, meditation, etc.), improving physical performance (e.g., weight training, sports, martial arts, sexual techniques, etc.).

The teacher **30** may interact in any manner with the students **31** and **32** in their learning, and may include assisting the students **31** and **32** in their learning. The teacher **30** verbally or non-verbally directs, or provides direction to, the students **31** and **32**. The students **31** and **32** receive, and may act upon, the direction provided by the teacher **30**. The teacher **30** may be a traditional teacher such as in a formal classroom environment or in a lecture hall. The teacher **30** may be, *inter alia*, a mentor, a counselor such as a job counselor, a spiritual counselor (e.g., a priest, minister, or rabbi), a relationship counselor (e.g., a social worker, psychotherapist, etc.), a coach (e.g., a sports coach such as a football team coach or a basketball team coach; a personal development coach; a business coach, etc.), a lawyer (e.g., a lawyer teaching the students **31** and **32** about estate planning), a business or financial counselor (e.g., a certified financial planner, a tax consultant, etc.), a student functioning as a teacher, etc. The teacher **30** may be a team leader or facilitator such as in a meeting wherein the students **31** and **32** are attempting to solve a

problem under the guidance of the team leader. The teacher **30** may be a guide such as in an "outward bound" program. The teacher **30** may function as a student at times during the session.

The teacher **30** may operate in any or any combination of various modes such as, *inter alia*, a lecture mode, a query mode, a training mode, an observation mode, or an evaluation mode. The teacher **30** may operate in a traditional lecture mode by lecturing, such that the students **31** and **32** have a passive role of listening to the teacher **30** and acquiring knowledge of the lecture material presented by the teacher **30**. The teacher **30** may operate in a query mode by asking questions of the students **31** and **32**, such that the students **31** and **32** have a dynamic role of responding to the questions. The teacher **30** may operate in a training mode by directing the students **31** and **32** to act in a specified manner (e.g., to engage in the steps of a physical exercise or to visualize specified images), such that the students **31** and **32** have a dynamic role of acting in said specified manner. The teacher **30** may operate in an observation mode such as by collecting and recording data (mentally, by computer, or by any other applicable means) with respect to any applicable functionality (e.g., rate of learning, depth of learning, study habits, communication skills, memory skills, analysis skills, etc.) relating to the students **31** and **32**. The teacher **30** may operate in an evaluation mode by evaluating the students **31** and **32** with respect to the data obtained from the observation mode or with respect to relevant data obtained from any other source. The teacher **30** may provide feedback the students **31** and **32** as to the results of said evaluating.

The preceding examples of the teacher **30** are merely illustrative of the numerous ways in which a teacher may "teach" a session to the students **31** and **32**. Hence, "teaching" by the

teacher encompasses a multitude of possible activities by the teacher **30** including, but not limited to, traditional teaching. For example, the teacher **30** is not limited to a person and may include other possibilities such as, *inter alia*, a video (e.g., a video featuring various scenes for evoking responses from the students **31** and **32**), written materials (e.g., a worksheet), a computer, a website, etc. Note that another student may function as the teacher **30**. Any, some, or all of the student(s) and/or teacher(s) may be interconnected with each other or one another through any network known to one of ordinary skill in the art such as, *inter alia*, the Internet, an Intranet, etc.

FIG. 1 shows the teacher **30** in a location **34** and the students **31** and **32** in a location **36**. The location **34** and the location **36** may be the same location such as, *inter alia*, a same room. Alternatively, the location **34** and the location **36** may be different locations (e.g., the location **34** may be a room in Chicago while the location **36** may be a room in Denver, such that the teacher **30** communicates by video conference or teleconference during a session of the course with the students **31** and **32**). Thus, while FIG. 1 shows the students **31** and **32** in the same location **36**, the students **31** and **32** may alternatively be in different locations.

A session of the course is said to be taught "non-remotely" by the teacher **30** to the student **31** when the teacher **30** and the student **31** are in the same location. A session of the course is said to be taught "remotely" by the teacher **30** to the student **31** when the teacher **30** and the student **31** are in different locations. Note that it is possible for the session to be taught non-remotely to the student **31** and remotely to the student **32** (e.g., the teacher **30** and the student **31** may be in the same room while the student **32** may be in a different room during the session of

the course). If a session is mentioned herein to be taught remotely without specifying any specific student to whom the session is being taught remotely, then it is understood herein that the session is taught remotely to at least one student in the session. Similarly, if a session is mentioned herein to be taught "non-remotely" without specifying any specific student to whom the session is being taught non-remotely, then it is understood herein that the session is taught non-remotely to at least one student in the session. Thus a session may be taught only remotely, only non-remotely, or both remotely and non-remotely.

A session of the course is said to be taught "live" by the teacher **30** to the student **31** when the teacher **30** and the student **31** are in live communication with each other while the session is being taught (e.g., when the teacher **30** is a person and both the teacher **30** and the student **31** are in live communication by being physically present in the same room or by communicating by teleconference during the session or by communicating over the Internet). A session of the course is said to be taught "off line" by the teacher **30** to the student **31** when the teacher **30** and the student **31** are not in live communication with each other while the session is being taught (e.g., when the teacher **30** has videotaped a lecture and the student **31** views and listens to the videotape during the session, when the teacher **30** is a computer or written materials, etc.). Note that it is possible for the session to be taught live to the student **31** and off line to the student **32**. If a session is mentioned herein to be taught live without specifying any specific student to whom the session is being taught live, then it is understood herein that the session is taught live to at least one student in the session. Similarly, if a session is mentioned herein to be taught off line without specifying any specific student to whom the session is being taught off line, then it is

understood herein that the session is taught off line to at least one student in the session. Thus a session may be taught only live, only off line, or both live and off line.

FIG. 1 shows a communication path **24** between the teacher **30** and student **31**, and a communication path **26** between the teacher **30** and student **32**. The communication path **24** is shown in FIG. 1 to point from the teacher **30** to the student **31** and also from the student **31** to the teacher **30**, which indicates a bidirectional communication. For some sessions, however, the communication may be unidirectional from the teacher **30** to the student **31** only (e.g., in a lecture by the teacher with no questions or comments from the student permitted; in a videotape playback of the teacher's lecture). Similarly, the communication path **26** is shown in FIG. 1 to point from the teacher **30** to the student **32** and also from the student **32** to the teacher **30**, which indicates a bidirectional communication. For some sessions, however, the communication may be unidirectional from the teacher **30** to the student **32** only, or unidirectional from the student **32** to the teacher **30** only. Generally, the communication may be bidirectional, unidirectional, or both.

The concepts "teacher" and "student" are dynamic concepts. In a given session, for example, a person may function as both a teacher and student at different times during the session, depending on the functional role of the person in relation to the roles of the other session participants at the different times during the session.

In FIG. 1, a questionnaire **16** includes items that relate to at least one session of the course. An item comprises computer readable data relating to evaluating the teacher or teachers (e.g., the teacher **30**), the course, or the students (e.g., the students **31** and **32**). FIGS. 5 and 8,

discussed *infra*, depict examples of the questionnaire **16** and the items included therein. FIGS. 5 and 6 show that an item prompts the students **31** and **32** for a response to the item. Such responses by a student to items generate data. The students **31** and **32** in FIG. 1 may each be requested to provide data in relation to said at least one session of the course that was taught to the students **31** and **32** by the teacher **30**. The data may include: teacher data relating to the teacher, student data relating to the student, course data relating to the course, or combinations thereof. The data may also include participant data relating to a plurality of participants or to a single participant, course data relating to the course, and combinations thereof, wherein each participant of the plurality of participants or the single participant is a teacher or student of the course.

As shown in FIG. 1, the students **31** and **32** each enter such data into a device **12** and **14**, respectively. Thus, the data so entered into the device **12** by the student **31** reflects a response by the student **31** to at least one item that is presented to the student **31**. Similarly, the data so entered into the device **14** by the student **32** reflects a response by the student **32** to at least one item that is presented to the student **32**. The student **31** enters data into the device **12** over a transmission path **41**. The transmission path **41** may comprise a path from the student **31** to data entry buttons of the device **12**. Similarly, the student **32** enters data into the device **14** over a transmission path **42**. The transmission path **42** may comprise a path from the student **32** to data entry buttons of the device **14**.

The preceding discussion disclosed the students **31** and **32** entering the data into the devices **12** and **14**. Nonetheless, the teacher **30** may additionally or alternatively enter data about

the students, other teachers, the course, or combinations thereof, into a device such as the device **12** or **14**. Thus, a first person could be evaluated by a second person in a same role (e.g., in a teacher role or in a student role). Alternatively, a first person could be evaluated by a second person in a different role (e.g., a student evaluating a teacher, or a teacher evaluating a student). Generally, a participant in the least one session may enter data into a device (e.g., the device **12**), wherein the participant is a student (e.g., the student **31**) or a teacher (e.g., the teacher **30**).

The data entered into the device **12** or **14** may be stored in a non-volatile memory portion of the device **12** or **14**, which means that the stored data will continue to exist in the device **12** or **14** when power to the device **12** or **14** is disabled. The data entered into the device **12** or **14** may be stored in a volatile memory portion of the device **12** or **14**, which means that the stored data will no longer exist in the device **12** or **14** when power to the device **12** or **14** is disabled. Alternatively, the data entered into the device **12** or **14** may be not stored in a memory portion of the device **12** or **14**, but directly transmitted to an external destination (e.g., an external database or computer) for subsequent analysis (e.g., statistical analysis). As stated *supra*, the device **12** or **14** may not have a memory and may not be capable of recording data, or the device **12** or **14** may have memory and/or recording capabilities which are not utilized for the data entered into the device **12** or **14**.

The devices **12** and **14** may be a same device or different devices. Thus, an analog device (e.g., a tape recorder) may be utilized for either or both of the devices **12** and **14**. The devices **12** and **14** may each comprise a computer usable medium with embedded computer readable program code, embedded computer readable data, or both. The devices **12** and **14** may each

include a data transmission mode for transmitting data to an external destination following entry of said data (e.g., by a user, by an external device, etc.) into said devices **12** and **14**, and such entered data may either be recorded or not be recorded (by control of hardware, software, the user, etc.) within said devices **12** and **14**.

In FIG. 1, the data entered into the devices **12** and **14** may be transmitted over transmission paths **46** and **47**, respectively, to a database **18** that is accessible to a computer **20** through communication path **19**. The transmission paths **46** and **47** may each comprise, *inter alia*, cable lines, telephone lines, satellite transmissions, the Internet, radio frequency transmission, laser radiation transmission at a suitable frequency, etc. Said data may be transmitted via transmission paths **46** and **47** in real time (i.e., upon or immediately after entry of the data into the devices **12** and **14**) or after a period of storage in the devices **12** and **14**. Additionally, the database **18** may be updated in real time with the data so transmitted (i.e., the database **18** may updated upon receipt of the data). The database **18** generally refers to a repository for storing the transmitted data. Accordingly, the database **18** may hold the transmitted data in the form of, *inter alia*, tables, relational database, spreadsheets, files, etc. The database **18** may have computer readable data embedded therein, and the database **18** may be embedded in a computer usable medium. Although FIG. 1 shows the database **18** as being coupled to the computer **20**, the database **18** may be located either external to a computer system (e.g., the computer system **90** depicted in FIG. 9) comprising the computer **20**, or within a computer system comprising the computer **20**.

The computer **20** may be a remote computer, a non-remote computer, or a partially

remote computer. The computer **20** is said to be a non-remote computer relative to the student **31** if the student **31** and the computer **20** are in a same location. The computer **20** is said to be a remote computer relative to the student **31** if the student **31** and the computer **20** are in different locations. The computer **20** is said to be a partially remote computer if the computer **20** is a remote computer relative to the student **31** and is a non-remote computer relative to the student **32**. If the computer **20** is mentioned herein as a remote computer without reference to any specific student in a session, then it is understood herein that the computer **20** is a remote computer relative to at least one student in the session. Similarly, if the computer **20** is mentioned herein as a non-remote computer without reference to any specific student in a session, then it is understood herein that the computer **20** is a non-remote computer relative to at least one student in the session. If the computer **20** is not identified herein (specifically or impliedly) as a remote computer, a non-remote computer, or a partially remote computer, then the computer **20** may be a remote computer, a non-remote computer, or a partially remote computer.

The computer **20** comprises an algorithm **22** in the form of software code that processes the aggregate data in the database **18**. The aggregate data is the composite data entered by at least two students such as the students **31** and **32**, by a plurality of participants, or by a single participant a plurality of instances into at least one device. The algorithm **22** may analyze said aggregate data statistically, resulting in a statistical analysis of the aggregate data. For example, the algorithm **22** may calculate a mean and standard deviation selected data. The algorithm **22** may include normalizing the data of one or more students, of said plurality of participants, or of

said single participant, in accordance with a statistical criterion. For example, if the data entered by a given student is highly biased (e.g., the teachers are consistently rated very favorably by the given student), then such teacher ratings of said data of the given student may be lowered by the algorithm **22** to conform to average teacher ratings of other students.

The statistical analysis of the aggregate data may be used in many ways. As a first example, said statistical analysis may be utilized for determining whether the teacher will teach a subsequent session of the course. Said teacher may have been scheduled prior to the statistical analysis to teach the subsequent session of the course. Said teacher may have been scheduled prior to the statistical analysis to teach the subsequent session of the course within a short period (e.g., 10 minutes, 1 hour, 24 hours, a week, etc., depending on need) after the end of the at least one session of the course. As a second example, said statistical analysis may be utilized for determining how each teacher is being rated. As a third example, said statistical analysis may be utilized for determining how much the students like different courses or different sessions of the course. As a fourth example, said statistical analysis may be utilized for determining effectiveness of a course or a session thereof as a function of the student location **36** (e.g., a given course or session thereof may be more effective in Florida than in Massachusetts). As a fifth example, said statistical analysis may be utilized for determining effectiveness of a course or a session thereof as a function of the time of day at which the course is taught (e.g., morning, afternoon, evening, 3:00OPM-5:00PM, 8:00AM, 10:00PM, etc.). As a sixth example, said statistical analysis may be utilized for determining which teacher of several teachers is best suited to teach a given group of students. As a seventh example, said statistical analysis may be utilized

for identifying a given teacher's strengths and weaknesses. As a eighth example, said statistical analysis may be utilized for determining which teacher of several teachers is best suited to teach a course session: of given subject content, in a given geographical location, at a particular time during the day, to students predominantly of a given gender, to students of a given age category, combinations thereof, etc. As an ninth example, said statistical analysis may be utilized for strengthening a curriculum of courses by modifying the curriculum and/or course material to reflect said statistical analysis.

If the entered data is transmitted to the database **18** in real time and the database **18** is updated in real time, then the statistical analysis of the aggregate data may be performed by the algorithm **22** in real time and therefore utilized in particular ways. With such real-time transmission and processing of the aggregate data, problems could be identified "on the fly" so that corrective action could be taken quickly. As a first example, if multiple sessions of the course are scheduled during a given day, and as sessions of the course are progressing during the given day, the real-time statistical analysis could be utilized to change subject matter of sessions, change teachers, etc. to improve course performance for the given day. As a second example, if a teacher is getting bad ratings during the given day, said teacher can be replaced in subsequent sessions of the given day by a different teacher. As a third example, if processing the data indicates that a given student appears to be burnt out, then said student can be placed in a less demanding subsequent session during the given day.

FIG. 1 depicts the questionnaire **16** as being external to the devices **12** an **14**. In contrast, FIG. 2 depicts the system **10** of FIG. 1 with the questionnaire **16** encoded within the devices **12**

an **14**, in accordance with embodiments of the present invention. The student **31** may have access to the questionnaire **16** through any means known to one of ordinary skill in the art such as through the transmission path **43** from device **12**. Similarly, the student **32** has access to the questionnaire **16** through the transmission path **44** from device **14**. In all other respects, FIG. 2 has the same features and functionality as does FIG. 1.

FIG. 3 depicts the system **10** of FIG. 2 without the database **18**, in accordance with embodiments of the present invention. In FIG. 3, data is transmitted over the transmission paths **48** and **49** from the devices **12** and **14**, respectively, to the computer **20** where said transmitted data are stored in a memory portion of, or in a peripheral memory device coupled to, the computer **20** (instead of in the database **18** of FIG. 2), such that said stored data may be processed and statistically analyzed by the algorithm **22**. The transmission paths **48** and **49** may each comprise, *inter alia*, cable lines, telephone lines, satellite transmissions, the Internet, radio frequency transmission, laser radiation transmission at a suitable frequency, etc. Said data may be transmitted via transmission paths **48** and **49** in real time (i.e., upon or immediately after entry of the data into the devices **12** and **14**) or after a period of storage in the devices **12** and **14**. Although the questionnaire **16** in FIG. 3 is encoded within the devices **12** and **14**, the questionnaire **16** may alternatively be located external to the devices **12** an **14** as in FIG. 1. In all other respects, FIG. 3 has the same features and functionality as does FIG. 2.

FIG. 4 depicts a timeline for the system **10** of FIGS. 1-3, in accordance with embodiments of the present invention. In FIG. 4, sessions **51**, **52**, and **53** of a course are depicted as occurring sequentially time t increases. Sessions **52** and **53** collectively constitute the at least one session

for which data is entered by the students **31** and **32** into the devices **12** and **14**, respectively, in FIGS. 1-3. The items of the questionnaire **16** to which said data is associated may be presented to the students **31** and **32**: prior to the at least one session (e.g., at time t_1 in FIG. 3); during the at least one session (e.g., at time t_2 in FIG. 3); or after the at least one session (e.g., at time t_3 in FIG. 3). Said data may be entered into the devices **12** and **14**: prior to the end of the at least one session (e.g., at time t_4 in FIG. 3); or within a time interval Δt following the end of the at least one session. As an example Δt may have a value of, *inter alia*, ½ minute, 1 minute, 5 minutes, 10 minutes, or 30 minutes.

FIG. 5 depicts a sample questionnaire for use with the system of FIG. 1, 2, or 3 for a course having a teacher and students, in accordance with embodiments of the present invention. The sample questionnaire of FIG. 5 may be used for course evaluations for at least one session of the course. The sample questionnaire of FIG. 5 depicts 9 evaluation items on the sample questionnaire. Items 1-3 relate to the teacher, items 4-6 relate to the students, and items 7-9 relate to the course. The students' responses to the items 1-3 generate teacher data relating to the teacher. The students' responses to the items 4-6 generate student data relating to the student. The students' responses to the items 7-9 generate course data relating to the course. The students' responses to items 1-9 are recorded for each item as A, B, C, D, or E as shown, wherein A, B, C, D, and E are in order of increasing positive response such that "A" means least positive and "E" means most positive. Note that the letters A, B, C, D, and E are arbitrary symbols and any other symbols may be used for the responses. For example, the numbers 1, 2, 3, 4, and 5 may be used instead of A, B, C, D, and E, respectively (as illustrated *infra* in conjunction with

FIG. 8). Such use of numbers allows the algorithm **22** of FIGS. 1-3 to perform numerical computations (e.g., statistical analyses) using the numerical responses 1, 2, 3, 4, and 5. While FIG. 5 shows five possible responses for each item, at least two possible responses (e.g., A / B; Yes / No; etc.) are generally required for each item. Additionally, the form of the possible responses may be any form known to a person of ordinary skill in the art of questionnaires. The scope of the present invention includes use of a single questionnaire or of multiple questionnaires.

FIG. 6 depicts responses to the sample questionnaire of FIG. 5, in accordance with embodiments of the present invention, wherein a blackened circle (i.e., ●) denotes a student's response selected from the possible responses. FIG. 7 depicts the responses of FIG. 6 encoded in a file record **58**, in accordance with embodiments of the present invention.

FIG. 8 depicts an illustrative questionnaire for use with the system of FIG. 1, 2, or 3 for a course having a teacher and students, in accordance with embodiments of the present invention. The illustrative questionnaire of FIG. 8 may be used for course evaluations for at least one session of the course. The sample questionnaire of FIG. 8 depicts 5 items on the illustrative questionnaire; i.e, items: "Overall Effect of Session(s)", "Students Benefiting From Session(s)", ..., "Teacher's Utilization of Material." items 1-2 relate to the students, items 3-5 relate to the teacher, and no items on FIG. 8 relate to the course. The students' responses to the items 1-2 generate student data relating to the student. The students' responses to the items 3-5 generate teacher data relating to the teacher. The students' responses to items 1-5 are recorded for each item as 1-, 2-, 3-, 4-, and 5-, wherein 1-, 2-, 3-, 4-, and 5- are in order of increasing positive

response such that "1-" means least positive and "5-" means most positive. Note that the letters A, B, C, D, and E are arbitrary symbols and any other symbols may be used for the responses. Each such item in FIG. 8 has 6 possible responses denoted by the numbers 1, 2, 3, 4, 5, and 6. The student may denote his or her response to an item by, *inter alia*, circling one of the numbers 1, 2, 3, 4, 5, and 6. The illustrative questionnaire of FIG. 8 is analogous to the sample questionnaire of FIG. 5 and is in a different format than is the sample questionnaire of FIG. 5.

FIG. 9 depicts a computer system **90** for evaluating a course, in accordance with embodiments of the present invention. The computer system **90** may correspond to the computer **20** of FIGS. 1-3 with or without the database **18**. The computer system **90** comprises a processor **91**, an input device **92** coupled to the processor **91**, an output device **93** coupled to the processor **91**, and memory devices **94** and **95** each coupled to the processor **91**. The input device **92** may be, *inter alia*, a keyboard, a mouse, a PDA, etc. Either of both of the memory devices **94** and **95** may store the data transmitted from the devices **12** and **14** of FIGS. 1-3. The output device **93** may be, *inter alia*, a printer, a plotter, a computer screen, a magnetic tape, a removable hard disk, a floppy disk, etc. The memory devices **94** and **95** may be, *inter alia*, a hard disk, a dynamic random access memory (DRAM), a read-only memory (ROM), etc. The memory device **95** includes a computer code **97** which includes an algorithm (e.g., the algorithm **22** of FIGS. 1-3) for processing (e.g., statistically analyzing) said transmitted data. The processor **91** executes the computer code **97**. The memory device **94** includes input data **96**. The input data **96** includes input required by the computer code **97**. The output device **93** displays output from the computer code **97**. Either or both memory devices **94** and **95** (or one or more additional memory or data

storage devices not shown in FIG. 9) may be used as a computer usable medium having a computer readable program code embodied therein, wherein the computer readable program code comprises the computer code **97**. If the database **18** is present in (or coupled to) the computer system **90**, the database **18** may be embedded in a computer usable medium such, *inter alia*, either or both memory devices **94** and **95** (or one or more additional memory or data storage devices not shown in FIG. 9).

While FIG. 9 shows the computer system **90** as a particular configuration of hardware and software, any configuration of hardware and software, as would be known to a person of ordinary skill in the art, may be utilized for the purposes stated *supra* in conjunction with the particular computer system **90** of FIG. 9. For example, the memory devices **94** and **95** may be portions of a single memory device rather than separate memory devices.

The scope of the present invention includes each of a plurality of devices being capable of storing all of the data entered by all participant in a session, by sensing entry of said data by all of said participants. The scope of the present invention also includes each of the plurality of devices being capable of processing (e.g., statistically analyzing) said sensed data. Additionally, the plurality of devices may collectively represent a distributed network of devices capable of performing all functions described herein.

While particular embodiments of the present invention have been described herein for purposes of illustration, many modifications and changes will become apparent to those skilled in the art. Accordingly, the appended claims are intended to encompass all such modifications and changes as fall within the true spirit and scope of this invention.

The claims defining the invention are as follows:

1. An evaluation method, comprising:

entering data by a dynamic participant into an electronic device, wherein the data reflect a response by the dynamic participant to at least one item of a questionnaire that is presented to the dynamic participant, wherein the at least one item relates to at least one session, wherein the at least one session is taught by a teacher of a course, wherein the data reflecting the response by the dynamic participant are selected from the group consisting of teacher data relating to the teacher, student data relating to a student of the course, course data relating to the course, and combinations thereof, and wherein the dynamic participant is selected from the group consisting of the student and the teacher; and

analyzing the data using a computer algorithm to determine an effective performance of the dynamic participant and elements with which the dynamic participant interacts.

2. The method of claim 1, wherein the data comprise said course data.

3. The method of claim 1, wherein the electronic device comprises a personal digital assistant (PDA).

4. The method of claim 1, wherein the entered data are adapted to be transmitted from the electronic device to an entity selected from the group consisting of a database, a computer, and combinations thereof.

5. The method of claim 4, wherein the entered data are adapted to be transmitted in real time from the electronic device to the entity.

6. The method of claim 4, wherein the entity comprises the computer.

7. The method of claim 4, wherein the entity comprises the computer, and wherein the computer is a remote computer.

8. The method of claim 4, wherein the entity comprises the database.

9. The method of claim 4, wherein the entity comprises the database, wherein the entered data are adapted to be transmitted in real time from the electronic device to the database, and wherein the database is adapted to be updated in real time with the transmitted data.

10. The method of claim 1, wherein the entered data are adapted to be normalized in accordance with a statistical criterion.

11. The method of claim 1, further comprising entering similar data by at least one other dynamic participant into at least one electronic device, wherein the similar data reflect a response by the at least one other dynamic participant to the at least one item of the questionnaire, wherein aggregate data comprise the data entered by the dynamic participant and the similar data entered by the at least one other dynamic participant, wherein the aggregate data are adapted to be analyzed statistically resulting in a statistical analysis of the aggregate data, and wherein the at least one electronic device is selected from the group consisting of the electronic device, at least one other electronic device, and combinations thereof.

12. The method of claim 11, wherein the aggregate data comprise said teacher data, and wherein the statistical analysis is adapted to be utilized for determining whether the teacher will teach a subsequent session of the course.

13. The method of claim 12, wherein the teacher was scheduled prior to the statistical analysis to teach the subsequent session of the course.

14. An apparatus, comprising:

an electronic device adapted to have data entered therein by a dynamic participant, wherein the data reflect a response by the dynamic participant to at least one item of a questionnaire that is presented to the dynamic participant, wherein the at least one item relates to at least one session, wherein the at least one session is taught by a teacher of a course, wherein the data reflecting the response by the dynamic participant are selected from the group consisting of teacher data relating to the teacher, student data relating to a student of the course, course data relating to the course, and combinations thereof, and wherein the dynamic participant is selected from the group consisting of the student and the teacher; and

means for analyzing the data using a computer algorithm to determine an effective performance of the dynamic participant and elements with which the dynamic participant interacts.

15. The apparatus of claim 14, wherein the data comprise said course data.

16. The apparatus of claim 14, wherein the electronic device comprises a personal digital assistant (PDA).

17. The apparatus of claim 14, wherein the entered data are adapted to be transmitted from the electronic device to an entity selected from the group consisting of a database, a computer, and combinations thereof.

18. The apparatus of claim 14, wherein at least one electronic device is adapted to have similar data entered therein by at least one other dynamic participant, wherein the similar data reflect a response by the at least one other participant to the at least one item of the questionnaire, wherein aggregate data comprise the data adapted to be entered by the participant and the similar data adapted to be entered by the at least one other dynamic participant, wherein the aggregate data are adapted to be analyzed statistically resulting in a statistical analysis of the aggregate data, and wherein the at least one electronic device is selected from the group consisting of the electronic device, at least one other electronic device, and combinations thereof.

19. An evaluation questionnaire, comprising:

at least one item executable with an electronic device, wherein the at least one item comprises computer executable data, wherein the electronic device is adapted to have data entered therein by a dynamic participant, wherein the data reflect a response by the dynamic participant to the at least one item, wherein the at least one item provokes a response by the dynamic participant to an aspect of at least one session of a course, wherein the data are selected from the group consisting of teacher data relating to the teacher, student data relating to a student of the course, course data relating to the course, and combinations thereof, and wherein the dynamic participant is selected from the group consisting of the student and the teacher.

20. A course, comprising:

at least one session of the course, wherein the course is adapted to have data entered by a dynamic participant into an electronic device, wherein the data is computer readable, wherein the data reflect a response by the dynamic participant to at least one item that is presented to the dynamic participant, wherein the at least one item relates to at the least one session, wherein the data reflecting the response by the dynamic participant are selected from the group consisting of teacher data relating to a teacher, student data relating to a student of the course, course data relating to the course, and combinations thereof, and wherein the dynamic participant is selected from the group consisting of the student and the teacher.

21. A data transmission method, comprising:

transmitting data from an electronic device to an entity selected from the group consisting of a database, a computer, and combinations thereof, wherein the data has been entered into the electronic device by a dynamic participant, wherein the data reflect a response by the dynamic participant to at least one item that is presented to the dynamic participant, wherein the at least one item relates to at least one session, wherein the at least one session is taught by a teacher of a course, wherein the data are selected from the group consisting of teacher data relating to the teacher, student data relating to a student of the course, course data relating to the course, and combinations thereof, and wherein the dynamic participant is selected from the group consisting of the student and the teacher.

22. An evaluation system, comprising:

a dynamic participant;

an electronic device adapted to have data entered therein by the dynamic participant;

a questionnaire constituting at least one item executable with the electronic device, wherein the at least one item provokes a response by the dynamic participant to an aspect of at least one session of a course;

a database, said database adapted to receive data transmitted thereto from the electronic device; and

a computer usable medium having a computer readable program code embodied therein, wherein the computer readable program code comprises an algorithm adapted to be executed on a computer so as to statistically analyse aggregate data; wherein the data are selected from the group consisting of teacher data relating to the teacher, student data

relating to a student of the course, course data relating to the course, and combinations thereof, the statistical analysis of the aggregate data facilitating a determination of an effective performance of the dynamic participant and elements with which the dynamic participant interacts.

23. A computer program product, comprising:

a computer usable medium having a computer readable program code embodied therein, wherein the computer readable program code comprises an algorithm adapted to be executed on a computer so as to statistically analyze aggregate data facilitating a determination of an effective performance of a dynamic participant and elements with which the dynamic participant interacts, wherein the aggregate data comprise data entered by a plurality of dynamic participants or a single dynamic participant a plurality of instances into at least one electronic device, wherein the data reflect a response by the plurality of dynamic participants or the single dynamic participant to at least one item that is presented to the plurality of dynamic participants or the single dynamic participant, wherein the at least one item relates to at least one session of a course, wherein the at least one session is taught by a teacher of the course, wherein the data are selected from the group consisting of dynamic participant data relating to the plurality of dynamic participants or the single dynamic participant, course data relating to the course, and combinations thereof, and wherein each dynamic participant of the plurality of dynamic participants or the single dynamic participant is selected from the group consisting of the teacher and a student of the course.

24. An evaluation method substantially as herein described with reference to an embodiment as shown in the accompanying drawings.

25. An apparatus substantially as herein described with reference to an embodiment as shown in the accompanying drawings.

26. An evaluation questionnaire substantially as herein described with reference to an embodiment as shown in the accompanying drawings.

27. A course substantially as herein described with reference to an embodiment as shown in the accompanying drawings.

28. A data transmission method substantially as herein described with reference to an embodiment as shown in the accompanying drawings.

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29. An evaluation system substantially as herein described with reference to an embodiment as shown in the accompanying drawings.

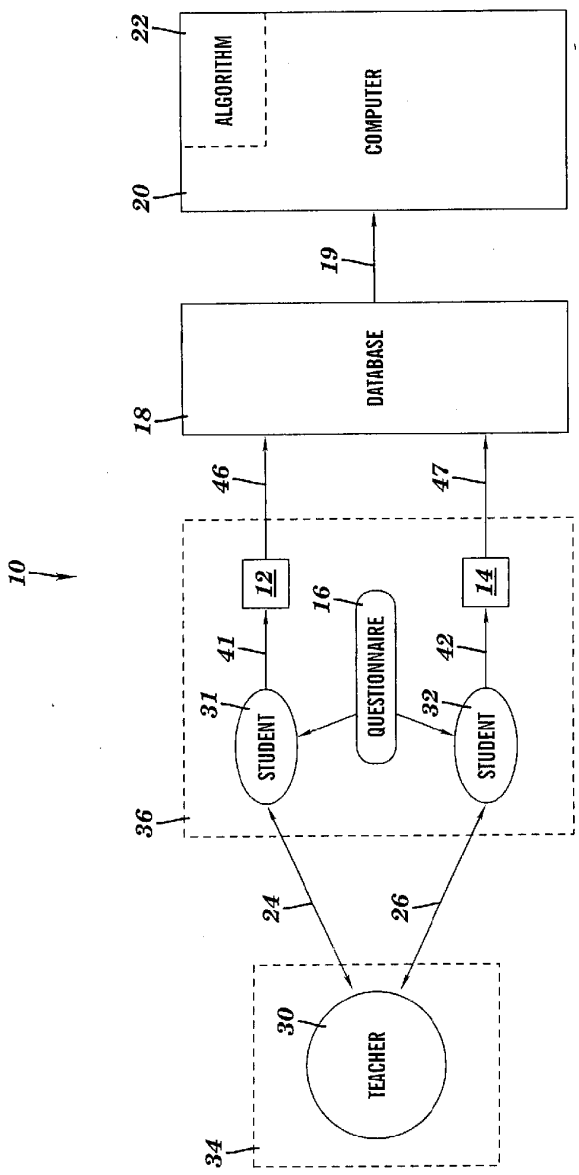
30. A computer program product substantially as herein described with reference to an embodiment as shown in the accompanying drawings.

DATED this Fourth Day of August, 2009

First Principles, Inc.

Patent Attorneys for the Applicant

SPRUSON & FERGUSON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COMPUTER
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19
18
DATABASE
46
47
12
14
16
QUESTIONNAIRE
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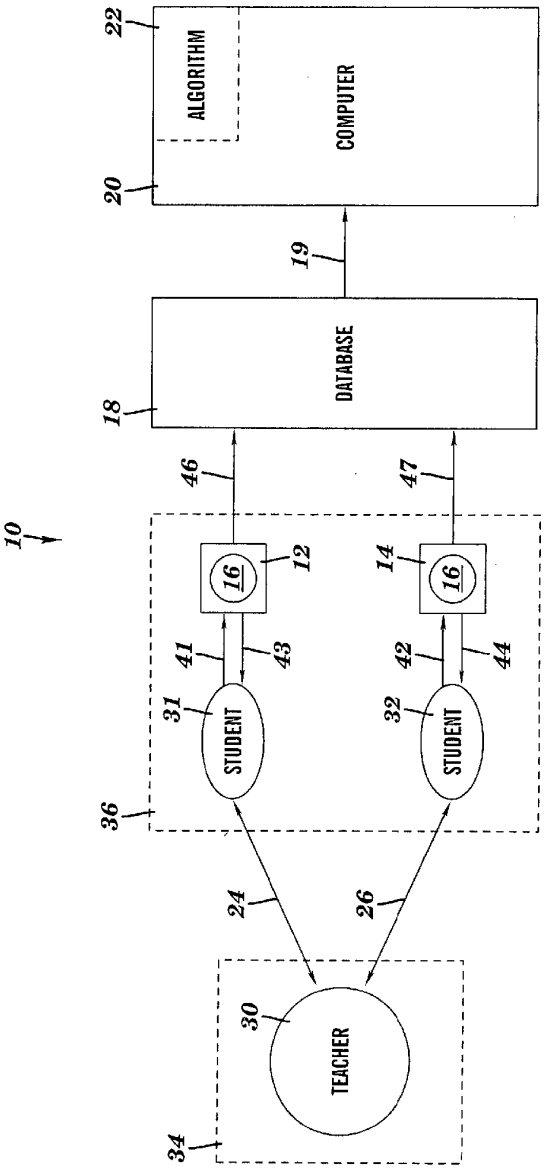
42
31
32
STUDENT
STUDENT
36
24
26
30
TEACHER
34

FIG. 1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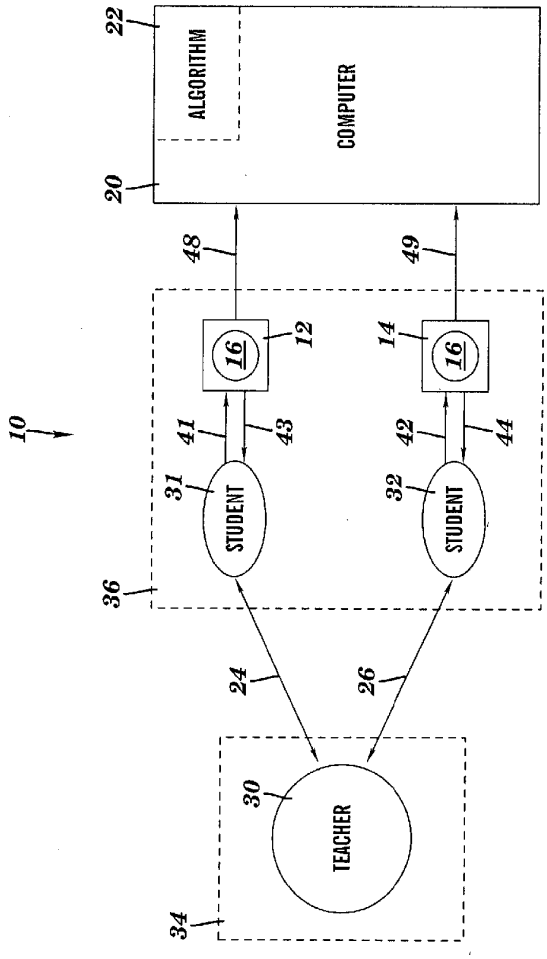
TEACHER
34

FIG. 2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TEACHER
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FIG. 3

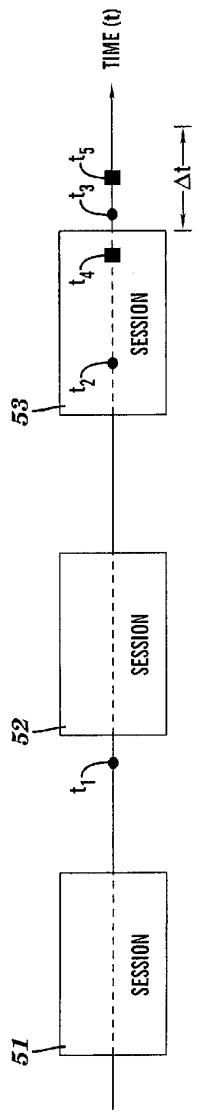

FIG. 4

SAMPLE QUESTIONNAIRE COMPRISING EVALUATION ITEMS

	EVALUATION ITEM	A	B	C	D	E
1.	HOW EFFECTIVELY DID THE TEACHER COMMUNICATE?	○	○	○	○	○
2.	HOW KNOWLEDGEABLE WAS THE TEACHER AS TO COURSE SUBJECT MATTER?	○	○	○	○	○
3.	HOW EFFECTIVE WAS THE TEACHER IN SUSTAINING STUDENT INTEREST?	○	○	○	○	○
4.	HOW MUCH DID YOU LEARN?	○	○	○	○	○
5.	HOW MUCH WERE DID YOU ENJOY THE SESSION(S)?	○	○	○	○	○
6.	HOW EFFECTIVE WAS YOUR NOTE TAKING?	○	○	○	○	○
7.	HOW APPROPRIATE WAS THE SUBJECT MATTER?	○	○	○	○	○
8.	HOW EFFECTIVE WERE THE COURSE MATERIALS?	○	○	○	○	○
9.	RATE ENVIRONMENTAL CONDITIONS (LIGHTING, SEATING, TEMPERATURE, ETC.)	○	○	○	○	○

FIG. 5

RESPONSE TO QUESTIONNAIRE COMPRISING EVALUATION ITEMS

	EVALUATION ITEM	A	B	C	D	E
1.	HOW EFFECTIVELY DID THE TEACHER COMMUNICATE?	○	○	○	●	○
2.	HOW KNOWLEDGEABLE WAS THE TEACHER AS TO COURSE SUBJECT MATTER?	○	○	○	○	●
3.	HOW EFFECTIVE WAS THE TEACHER IN SUSTAINING STUDENT INTEREST?	○	○	●	○	○
4.	HOW MUCH DID YOU LEARN?	○	○	●	○	○
5.	HOW MUCH WERE DID YOU ENJOY THE SESSION(S)?	○	○	○	●	○
6.	HOW EFFECTIVE WAS YOUR NOTE TAKING?	○	●	○	○	○
7.	HOW APPROPRIATE WAS THE SUBJECT MATTER?	○	○	●	○	○
8.	HOW EFFECTIVE WERE THE COURSE MATERIALS?	●	○	○	○	○
9.	RATE ENVIRONMENTAL CONDITIONS (LIGHTING, SEATING, TEMPERATURE, ETC.)	○	○	○	○	●

FIG. 6

D	E	C	C	D	B	C	A	E

FIG. 7

ILLUSTRATIVE QUESTIONNAIRE COMPRISING EVALUATION ITEMS

1. OVERALL EFFECT OF SESSION(S) 1- NO EFFECT 2- LEARNED AT LEAST 1 THING 3- FOOD FOR THOUGHT 4- NEW UNDERSTANDING OF SUBJECT MATTER 5- CHANGED MY WORLD VIEW 6- PROFOUNDLY CHANGED MY LIFE
2. STUDENTS BENEFITING FROM SESSION(S) 1- NONE 2- FEW 3- SOME 4- MANY 5- MOST 6- ALL
3. TEACHER'S KNOWLEDGE OF MATERIAL 1- NONE 2- KNOWS SOME MATERIAL 3- KNOWS ALL OF MATERIAL 4- CAN ADD TO SOME OF MATERIAL 5- CAN ADD TO MOST OF MATERIAL 6- FLUENT IN MATERIAL
4. TEACHER'S ENTHUSIASM 1- NONE 2- MINIMAL 3- SOME 4- QUITE 5- HIGHLY 6- RIVETING
5. TEACHER'S UTILIZATION OF MATERIAL 1- DETRACTED 2- NONE 3- SLIGHTLY ENHANCED 4- ENHANCED 5- GREATLY ENHANCED 6- LIFE CHANGING

FIG. 8

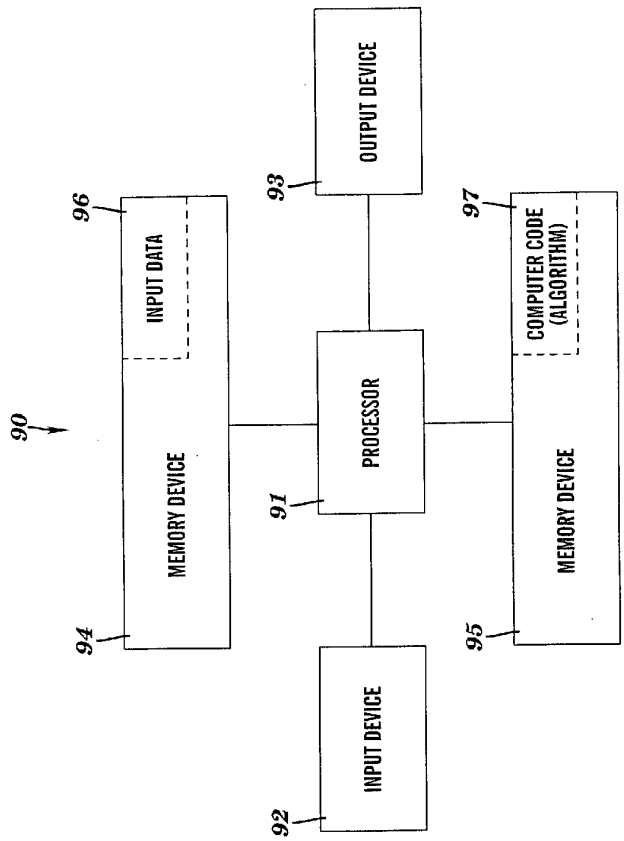
90
96
INPUT DATA
MEMORY DEVICE
94
93
OUTPUT DEVICE
PROCESSOR
91
INPUT DEVICE
92
97
COMPUTER CODE (ALGORITHM)
MEMORY DEVICE
95

FIG. 9