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- (71) **Applicant:** ARCELIK ANONIM SIRKETI [TR/TR]; E5
Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR).
- (72) **Inventors:** HATIPOGLU, Tugrul; E5 Ankara Asfalti
Uzeri, Tuzla, Istanbul, 34950 (TR). DUMAN, Metin; E5
Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR). SAGIN,
Canibek; E5 Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul
(TR). OZDEMIR, Ozcan Ekber; E5 Ankara Asfalti Uzeri,
Tuzla, 34950 Istanbul (TR). BAHAROZU, Dogan; E5
Ankara Asfalti Uzeri, Tuzla, 34950 Istanbul (TR).

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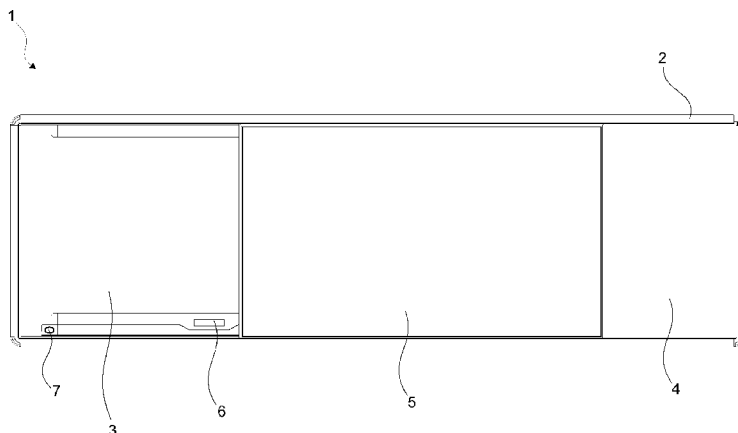
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(54) **Title:** AN ELECTRONIC EDUCATIONAL DEVICE COMPRISING A PROXIMITY SENSOR AND THE CONTROL METHOD OF THE SAME

Figure 1



(57) **Abstract:** The present invention relates to an electronic educational device (1) comprising a frame (2), a displaying means (3) disposed in the frame (2), a first panel (4) disposed inside the frame (2) to be side by side with the displaying means (3) and that is almost coplanar with the displaying means (3), at least one second panel (5) disposed movably on the frame (2) so as to be in front of the displaying means (3) and the first panel (4), and a control unit (6) that enables the displaying means (3) to be activated or deactivated.

Description**AN ELECTRONIC EDUCATIONAL DEVICE COMPRISING A PROXIMITY SENSOR AND THE CONTROL METHOD OF THE SAME**

- [0001] The present invention relates to an electronic educational device comprising a proximity sensor and the control method of the same.
- [0002] The blackboards and marker boards used in educational institutions, in meetings and seminars have been replaced by electronic educational devices in the course of time. The state of the art electronic educational devices generally comprise a first panel that performs the function of the blackboard and/or marker board and a displaying means whereby the electronic content supporting the subject being covered is shared with the listeners. Some electronic educational devices comprise a movable second panel situated in front of the writing surface and the displaying means. The second panel covers the front of the first panel and/or the displaying means depending on the position it is used. In the case the second panel covers the front of the displaying means, the displaying means is operational even if it cannot be used effectively. Accordingly, this increases energy consumption unnecessarily. Therefore, proximity sensors are included in the electronic educational devices in order to detect whether or not there is a barrier in front of the displaying means. The proximity of the barrier in front of the screen can be detected by means of the said sensor. However, this proximity data is not the same for each product and each position the product is located and is affected by factors like the shape of the board, changes in the lens and it becomes difficult reaching the result whether or not there is a barrier in front of the screen.
- [0003] In the International Patent Application No. WO2013032635, the calibration of the proximity sensor performed by values taken from various reflecting surfaces is disclosed.
- [0004] The aim of the present invention is the realization of an electronic educational device comprising a proximity sensor, the measurement performance of which is improved.
- [0005] The electronic educational device realized in order to attain the aim of the

present invention, explicated in the first claim and the respective claims thereof, comprises a proximity sensor that calibrates itself depending on the calibration threshold value calculated with the values read by the proximity sensor when the front side of the displaying means is open and when the front of the displaying means is closed with the panel. Thus, the proximity sensor is enabled to accurately reach the information whether the front of the displaying means is open or closed by making calibration in accordance with every situation.

[0006] In this embodiment, while the front of the displaying means is not closed by the panels, a value is read by the proximity sensor during calibration. After this operation, a value is read again by the proximity sensor while the front of the displaying means is closed by the panels. Afterwards, the calibration threshold value is calculated by the control unit with these values read by the proximity sensor.

[0007] In an embodiment of the present invention, if the value read by the proximity sensor is greater than the calibration threshold value while the electronic educational device is operating, the control unit turns off the displaying means or keeps the parameters of the displaying means like brightness, backlight intensity at a minimum so as to decrease the energy consumption, and if the value is smaller then no operation is performed. Thus, the displaying means is prevented from operating when the front thereof is closed.

[0008] In an embodiment of the present invention, the electronic educational means comprises a displaying means whereon the start and end of the calibration, the calibration threshold value calculated as a result of the calibration and the value read by the proximity sensor instantaneously are shown. Thus, the user can monitor at which process step the calibration is.

[0009] By means of the present invention, an electronic educational device is realized, that comprises a proximity sensor that is calibrated. The proximity sensor calibrates itself depending on the calibration threshold value that is calculated by the values read when the front of the displaying means is open and when the front of the displaying means is closed by the panel. Thus, the proximity sensor is enabled to accurately reach the result

whether the displaying means should be left operating or turned off by making calibration in accordance with every situation.

[0010] The electronic educational device realized in order to attain the aim of the present invention is illustrated in the attached figure, where:

Figure 1. is the schematic view of the electronic educational device.

[0011] The elements illustrated in the figures are numbered as follows:

1. Electronic educational device
2. Frame
3. Displaying means
4. First panel
5. Second panel
6. Control unit
7. Proximity sensor

[0012] The following symbols are used for explicating the electronic educational device (1) of the present invention:

- T: Calibration threshold value
- V: Instantaneous value read by the proximity sensor (7)
- V1: the value read by the proximity sensor (7) during calibration when the front of the displaying means (3) is not closed by the panels (4, 5)
- V2: the value read by the proximity sensor (7) during calibration when the front of the displaying means (3) is closed by the panels (4, 5)

[0013] The electronic educational device (1) comprises a frame (2), at least one displaying means (3) disposed inside the frame (2) and that enables the contents like documents, pictures, videos, etc. to be displayed, a first panel (4) disposed inside the frame (2) to be side by side with the displaying means (3) and that is almost coplanar with the displaying means (3), at least one second panel (5) that is mounted movably on the frame (2) so as to be in front of the displaying means (3) and the first panel (4), and a control unit (6) that enables the displaying means (3) to be activated or deactivated (Figure 1).

[0014] The electronic educational device (1) of the present invention comprises the proximity sensor (7) that is calibrated by the control unit (6) depending on the calibration threshold value (T) calculated by the values read when

the front of the displaying means (3) is open and when the front of the displaying means (3) is closed by the second panel (5). Thus, the proximity sensor (7) is enabled to accurately reach the information whether the front of the displaying means (3) is open or closed by making calibration. The control unit (6) decides whether the displaying means (3) should be kept operating or turned off depending on this data (Figure 1).

[0015] During calibration, a value (V1) is read by the proximity sensor (7) when the front of the displaying means (3) is not closed by the panels (4, 5). After this operation, a value (V2) is read, again by the proximity sensor (7) while the front of the displaying means (3) is closed by the panels (4, 5). Afterwards, the calibration threshold value (T) is calculated by the control unit (6) with these values (V1, V2) read by the proximity sensor (7). Consequently, a calibration threshold value (T) is determined according to the position of the electronic educational device (1).

[0016] In this embodiment, if the value (V) read by the proximity sensor (7) is greater than the calibration threshold value (T) while the electronic educational device (1) is operating, the control unit (6) turns off the displaying means (3) as a result of the notification received from the proximity sensor (7) or keeps the parameters of the displaying means (3) like brightness, backlight intensity at a minimum so as to decrease the energy consumption to a minimal amount. If the value (V) read by the proximity sensor (7) is smaller than the calibration threshold value (T), no operation is performed. Thus, the displaying means (3) is prevented from operating unnecessarily. Energy saving is provided and the electronic educational device (1) is prevented from malfunctioning due to overheating.

[0017] In an embodiment of the present invention, whether the calibration has started or ended, the calibration threshold value (T) calculated as a result of calibration or the value (V) read instantaneously by the proximity sensor (7) instantaneously are shown on the displaying means (3) by the control unit (6). Thus, the user can monitor at which process step the calibration is. By informing the user during the operation, the calibration process is enabled to be repeated in situations the value (V1, V2) cannot be read or

the values that are read are insufficient in calculating the calibration threshold value (T).

[0018] In an embodiment of the present invention, the proximity sensor (7) also provides the detection of the movement of the second panel (5). Thus, an additional element is not required to be installed.

[0019] By means of the present invention, an electronic educational device (1) comprising a proximity sensor (7) is realized. The proximity sensor (7) is calibrated by the control unit (6) in accordance with the calibration threshold value (T) calculated by the values read by the proximity sensor (7) when the front of the displaying means (3) is open and when the front of the displaying means (3) is closed by the second panel (5). Thus, the proximity sensor (7) is enabled to accurately reach the information whether the front of the displaying means (3) is open or closed by making calibration according to each product and environment. Depending on this information, either the displaying means (3) is left operating or is changed to the closed position by cutting off the energy.

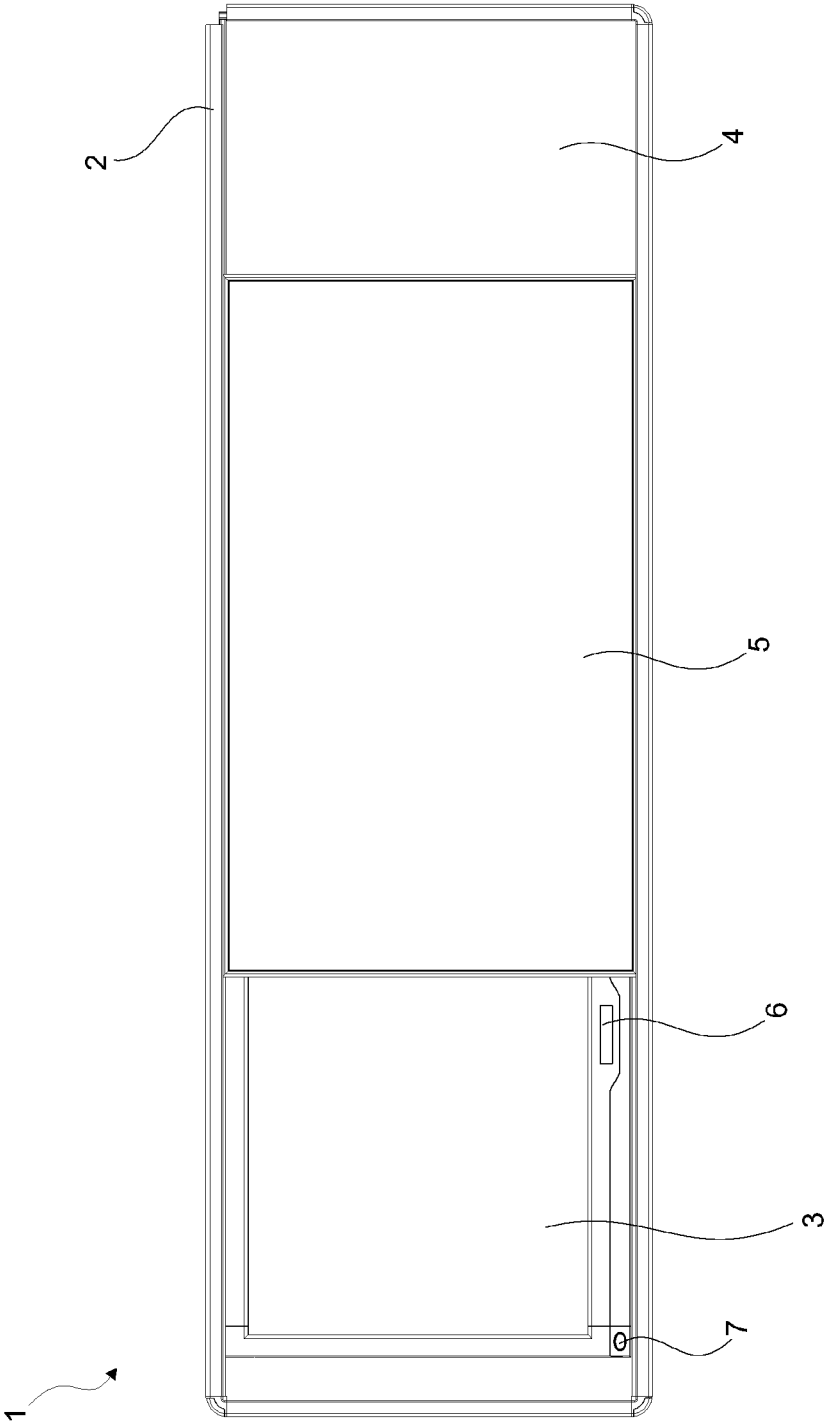
Claims

1. An electronic educational device (1) **comprising** a frame (2), at least one displaying means (3) disposed inside the frame (2) and that enables the contents like documents, pictures, videos, etc. to be displayed, a first panel (4) disposed inside the frame (2) to be side by side with the displaying means (3) and that is almost coplanar with the displaying means (3), at least one second panel (5) mounted movably on the frame (2) so as to be in front of the displaying means (3) and the first panel (4), and a control unit (6) that enables the displaying means (3) to be activated or deactivated, **characterized by** -a proximity sensor (7) that is calibrated by the control unit (6) in accordance with the calibration threshold value (T) calculated by the values (V1, V2) read when the front of the displaying means (3) is open and when the front of the displaying means (3) is closed by the second panel (5).
2. An electronic educational device (1) as in Claim 1, **characterized by** a value (V1) read by the proximity sensor (7) when the front of the displaying means (3) is not closed by the panels (4, 5), **by** a value (V2) read, again by the proximity sensor (7) when the front of the displaying means (3) is closed by the panels (4, 5) during calibration and **by** the control unit (6) that calculates the calibration threshold value (T) with these values (V1, V2) read by the proximity sensor (7).
3. An electronic educational device (1) as in Claim 1 or Claim 2, **characterized by** the control unit (6) that turns off the displaying means (3) or decreases the brightness value of the displaying means (3) or the backlight intensity of the displaying means (3) if the value (V) read by the proximity sensor (7) is greater than the calibration threshold value (T) while the electronic educational device (1) is operating.
4. An electronic educational device (1) as in any one of the above claims, **characterized by** the displaying means (3) whereon the start and end of the calibration, the calibration threshold value (T) calculated as a result of calibration and the value (V) instantaneously read by the proximity sensor (7) are shown.
5. An electronic educational device (1) as in any one of the above claims, **characterized by** the proximity sensor (7) that provides the detection of the

movement of the second panel (5).

6. A control method for an electronic educational device (1) as in any of the above claims, which comprises the steps of :
- starting the calibration process by the user (K),
 - displaying the indicator on the displaying means (3) relating to the start of the calibration,
 - reading the value (V1) by the proximity sensor (7) when the front of the displaying means (3) is open,
 - reading the value (V2) by the proximity sensor (7) when the front of the displaying means (3) is closed,
 - calculating the calibration threshold value (T) with these values (V1, V2) read by the proximity sensor (7),
 - displaying the calibration threshold value (T) on the displaying means (3),
 - displaying the indicator relating to the ending of the calibration process.
 - turning off the displaying means (3) or decreasing the screen brightness intensity or the backlight intensity thereof by the control unit (6) if the value (V) read by the proximity sensor (7) is greater than the calibration threshold value (T) while the displaying means (3) is operating.

Figure 1



INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2012/053888 A1 (MTV DIGITAL TECHNOLOGY SDN BHD [MY]; HENG MENG HEONG [MY]) 26 April 2012 (2012-04-26) page 5, line 9 - page 8, line 6; figures 1,2	1-6
A	----- EP 1 220 457 A2 (TOSHIBA KK [JP]) 3 July 2002 (2002-07-03) paragraphs [0001] - [0048]	1-6
A	----- US 2013/049641 A1 (SHEYNBLAT LEONID [US] ET AL) 28 February 2013 (2013-02-28) paragraphs [0018] - [0043]	1-6
A	----- US 2011/319140 A1 (KANBE MASAKI [JP]) 29 December 2011 (2011-12-29) paragraphs [0040] - [0169]	1-6



Further documents are listed in the continuation of Box C.



See patent family annex.

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European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040,
 Fax: (+31-70) 340-3016

Authorized officer

Díaz de Lezana, C

INTERNATIONAL SEARCH REPORT

Information on patent family members

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