BQ, the ePolling Program

Users Manual

BQ In-class polling

for the BQ-ILT program

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Enhanced Student Learning through the use of

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Introduction

Here are some brief notes to help you use web pages for in-class polling of students.

In this document I will give additional information that is not essential and put that information in parentheses as additional information (this is extra information). Feel free to skip such information.

The BQ In-class polling program can be sued as a stand-alone program. However, the emphasis of this document will be on using the BQ program with the ILT program while doing Peer Instruction and this information is presented in Section A. In section B information is presented about using the program for In-class polling that does not involve Peer Instruction and usually will not use ConcepTests. A separate document, "Instructions for Installing the BQ In-class Polling Program at Your School" (BQPollingInstallation2006_07_21.doc), describes how to set up the BQ In-class polling program on a server at your school and/or turn the computer that you use in a classroom into a server.

This program does not require the instructor to have any software on his or her computer while polling the students. All that is needed is a browser and can be run on Macintosh and Windows PCs. As far as we can tell, any fairly recent browser will work.

(In all of these instructions, since you are using an Internet browser, you can use the "back button" whenever you wish. Usually the page will be the way it was when you left it; however, this depends on the browser that you are using and you may need to "refresh" or "reload" your page.)

Students respond to your questions by using some sort of networked device and/or an IR wireless keypad (such as those produced by GTCOCalComp (PRS), DigitalC, or eInstruction (CPS)) and/or RF wireless keypads (such as those produced by GTCOCalComp (PRS) and TurningPoint (ResponseCards)). The networked devices can be networked laptops, desktops, cell phones with browsers, WiFi enabled PDAs, etc. The use of these devices by students will be described in Section D.

Part A

Getting Started – A Quick Overview

The Start Page

To use the BQ program instructors go to a start page that is
http://<BQMainSite>/lt3login/
This is at

http://polaris.deas.harvard.edu/bq/lt3login/

on the Harvard server. If the server is on a local PC with an IP address of 123.456.789.123 then instructors go to the start page at

http://123.456.289.123/lt3/lt3login/

Obviously, the first part of the address will depend on where the program is running. (The BQ program is an open source program, free for educational, non-profit, non-commercial use written in php and using a MySql database. you are allowed to run as many copies for this purpose as desired on computers and/or servers at your school. If you modify the program, please let me know. My must share these modifications freely with the educational community so that all can benefit and you cannot use the program or modifications commercially.)

Until a version of the ILT program is available for you to run at your school, students will need to go to

http://<BQMainSite>/student/

to start the program. Thus, at Harvard, this is

http://polaris.deas.harvard.edu/bq/student/

The first time an instructors use the program, their user names and passwords need to be put into the database. The recommended way to do this is to register in the ILT program at Harvard University first and use that registration for the BQ program regardless of where it is running. Registering at Harvard University requires gong to http://polaris.deas.harvard.edu/galileo/ This means you will use your ILT password as your BQ password. If you cange your ILT password, it will be changed automatically in the BQ program as soon as you use any ILT component of the BQ program.

(It is possible to register in the BQ program without going through Harvard University, and I can give you details if you need to use this alternate method.)

Logging in -- Overview

Once you have registered with the ILT program and know your password go to the Start Page indicated above. To use ConcepTests, resources from the ILT, and/or Peer Instruction, enter your email address and password in the boxes to the left.

The first time you do this, you will need to click the response requesting that your information be transferred from the ILT database. After the first time, the BQ program will present you with the courses you have prepared in the ILT.

Polling the Students -- Overview

After you choose a course you will be asked to choose a lecture. The associated ConcepTests will be transferred to the BQ database and you can start polling students. You can choose to send the ConcepTests to the students in any order just by clicking beside the button for a ConcepTest. You can send a ConcepTest more than once. In fact, with Peer Instruction a ConcepTest is usually sent twice, once before the students have discussed the concept and once after they have discussed the concept. Each time you send a ConcepTest it creates two questions. thus, the ConcepTest question is always an even numbered question and the odd numbered question is where the students wait until you

send the next question. You click on the ILT tab to obtain a ConcepTest to send. You can view student responses by clicking on the Histogram Tab or the Spreadsheet Tab. You can see who has responded by clicking on the Anon button and who has not responded by clicking on AnonPRS and responses arranged by the student login from the Anonymous tab. The Utilities Tab is a very useful place to go to navigate to the option or advanced feature you want with a little explanation.

   I have tried to write a very intuitive program so that you won't have to read any of the details in the Users Guide to be able to use the program. However, there are some features and capabilities that you might not discover by accident, so details will be given in the next section.

Sending Student Results back to the ILT program -- Overview

   If you want to send the student responses back to the ILT program, please click on the ILT tab once again and select the "Please click here to send this Lecture's concepTest data to the server" option. A series of screens will come up which should end up in your sending the data to the ILT program where it can be easily analyzed and the results communicated to the students.

Peer Instruction with BQ -- Details

Logging in – Details

   The entire BQ program can be run on your computer by using only a browser as long as you can be connected to the server running the program.

   Before you log in to the BQ program for Peer instruction, you need to use the ILT program to create one or more courses, one or more lectures in one or more of these courses, and have the ConcepTests that you might want to use in one of these lectures. It does not cause any problem if you have ConcepTests in a lecture that you do not actually send to students in a given lecture, but having too many in a lecture will make it difficult to find the one you want at a given time in the lecture. You may want to prepare a generic ConcepTest in case you think of a new question as the lecture progresses. The generic question might have no text and only indicate how many responses are possible and you would give the question and the possible choices verbally, write them on the board, etc.

   Just before class or at the beginning of class, go to the "Start Page" (see above) and log in using the left hand option. Select the course and lecture from the options provided and click on the "Start Class" option. While the BQ program is running, your computer needs to have a connection to the server running the BQ program.

   (Since programs are provided allowing you to run a server on the computer you will be using in the classroom, it is possible to run the BQ program on a laptop in a classroom where there is no Internet connection. However, the session would have to be started outside of the classroom where there was a connection to the server running the ILT program.)

Settings – Options and Features

There are a number of settings and features available for your use. These options can be selected by going to the Utilities tab once you are logged in. Most of your settings will be remembered from session to session and become your default settings, while other instructors will have their own "default" settings. The program comes with default settings which will be in effect until you change them.

Font Size: Many instructors like to use the BQ program to display the ConcepTest questions and possible answers to the students, especially if some students are not using browser-based response devices. you can control the size of the font that is used to display the text. Choose that option in the Utilities Menu and enter your desired setting.

Size of Table and its Cells – If a number of students are using IR devices as the response device, it may be very important to display to them one of the Anonymous views so they will know when their answer has been received. This can usually be done using the program that receives their responses, but if you desire to do this in the BQ program you may want to change the size of the display. this feature can be accessed from the Utilities menu and allows you to select the number of columns and rows, and the size of the cells.

Collecting Responses when students use IR or RF devices -- When students use IR or RF devices to respond to ConcepTests, it is necessary to have the device receiving their signal connected to a computer running a program which we call a "Bridge." These "Bridges" take the data received from the IR or RF devices and put them properly in the BQ database. Since there may be several "Bridges" putting data into the database at the same time as different instructors use the BQ program in different locations, each instructor will need to indicate which "Bridge" he or she is using. This option in the Utilities section allows the instructor to choose and/or change the "Bridge" that is being use. This choice remains the default choice for that instructor until the instructor changes this choice and/or another instructor chooses to use that "Bridge." As additional "Bridges" are put in different rooms the bridgeID and bridgeinfo values for these "Bridges" must be placed added in the corresponding fields in the nbridge table in the BQ database. Since this is a setting for all users of the program, no interface is provided to allow individual instructors to modify these data.

Timer Settings – This setting can be changed frm the Utilities menu by the instructor. As the instructor is using the BQ program the instructor will from time to time use one of the following views: ANON, AnonPRS, Anonymous, Histogram, and Responses. Each of these views requires that an instructor select one of the questions that has been posed for the students and this question becomes the designated question until the instructor selects a different question. By using the Timer settings the instructor can allow students to answer any of the questions or restrict the program so that only answers to the designated question will be recorded.

This setting makes no difference for students using IR or RF response devices, since their responses are always associated with the designated question.

Regardless of the setting there is no restriction on the number of times that students can change their minds. However, the settings can prevent an answer being changed after a question is no longer the designated question.

In a future version of this program (if there is sufficient demand) there will be a timer associated with the program. In this case the settings can also be set so that students can only answer questions during the time allowed by this timer clock.

Type of Response Pad – This setting only impacts students using browsers on web-enabled devices (laptops, desktops, Wireless PDAs, cell phones with browsers, etc.). Instructors can select the template for the web page that the students see. The program comes with three possible templates provided by the files in the "/student/" directory in the BQ program. These three files are pda_pad_table.php, pda_pad_tablehu.php, and pda_pad_tablebig.php. Questions that are sent to students will be multiple choice or short answer questions and students click buttons or links or enter answers in the browser.

- The pda_pad_table.php template allows students to send back short answer responses, even to multiple choice questions, and has small numbers in the upper left corner for students to click for multiple choice responses.
- The pda_pad_tablehu.pad.php does not allow students to send back free response answers and has small numbers in the upper left corner for students to click for multiple choice responses.
- The pda_pad_tablebig.php allows short answer responses and has bigger buttons that students can click for multiple choice responses.

People who use the BQ program are welcome to create other templates for browser based responses. This should be done by examining the three current templates and modifying one of them. As long as the new file is put into the /student/ directory beside these three files and given a name of pda_pad_tablexxx.php, where "xxx" is some combination of letters and/or numbers, the option that you create will appear as an item on the drop-down menu for this option in the Utilities section.

Histogram view -- Details

Most instructors use the histogram view extensively to inform them about how well the students have understood the concepts and to provide an anonymous display back to the students. However, while students are still answering a question an instructor may want to observe the histogram view while continuing to display to the students one of the anonymous views. If you know your instructo_id, you can use a second browser window and go to the same URL as the histogram, but replace the "Histogram.htm.php" in the URL with "HistogramR.htm.php?instructor_id=xxx", where the "xxx" stands for the instructor_id. The instructor_id can be obtained from the source code of almost any of the BQ web pages once you have logged in. There is a second version of this page with HistogramPalm.htm.php in place of HistogramR.htm.php. Some instructors have found that one verson works better than another for viewing the progress of the class on their wireless PDA as they walk around the room. These views do not allow the instructor to change the number of the question, but the view will move from question to question as the question number is changed in the main program.

Anonymous views – Details

When students are using IR response devices it is essential to let them know that their response has been received. In other cases it may still be useful to let everyone know who has and has not responded without indicating what responses have been most popular. The three anonymous views allow for this. The "ANON" view indicates which

students have not responded to the designated question. The "AnonPRS" view indicates which students have responded and how many times they have responded. The "Anonymous" view gives a grid showing both those that have and those that have not responded. The layout of this grid can be controlled through settings in the Utilities menu. If there are more students in class than are cells in the grid, the grid automatidcally gets larger by one row and one column.

Spreadsheet view -- Details

The spreadsheet presents a record of the last response for each student for every question. It is also updated dynamically. This can be very useful to see the progress of the class if a sequence of two or more questions are posed for the class to consider. If you want a record of the this spreadsheet in a program such as Excel, you can use the Utility of obtaining a graded spreadsheet and get a spreadsheet where the values are frozen. It is then easy to drag over this spreadsheet and paste the values into an Excel spreadsheet. This feature may be most useful at the end of class. The BQ program also has the option of having the computer automatically grade all the responses.

End of Class and Sending the Data to the ILT database

At the end of class you may want to send the data from class over to the ILT database. The ILT database can do statistical analyses of the responses in class, post the results, and carry out many other functions. However, the students MUST be registered in the ILT database or none of the responses that are sent will be recorded in the main part of the ILT database. If a student uses a web browser to respond and logs in through the BQ program, the student must enter the correct ID (the one they used when registering in the ILT program) in that field as he or she logs in or else the data for that student will not be transferred into the ILT database. Furthermore, the questions that are used must have come from the set of questions in an ILT lecture.

To send the data to the ILT database you will need to go click on the ILT tab and then click on the link that says "Please click here to send this Lecture's ConcepTest data to the server when the lecture is finished." When you click there a series of pages will appear as the data are prepared and sent to the ILT program. Only answers to ConcepTests are sent, so usually one the answers to even-number questions are prepared and sent. As is presented in Peer Instruction, the first time a ConcepTest is used, it is presented before students discuss among themselves, or is a "Pre" question. After students have discussed and then answer the same question, this is a "Post" question. The answers are so designated in the web page that is created as the data is sent to the ILT program.

Using the BQ Program with a Variety of Student Response Platforms

A variety of response platforms can be used simultaneously in the same classroom. If some of the students are using IR or RF devices to respond to questions, it is important to have the BQ program running on a computer somewhere on campus. The time delay involved in sending the signals outside of the Local Area Network probably makes this a necessity even though the programs (called "Bridges") that receive the data and send it to the BQ program are designed to operate over any network. The RF devices

are still very new and these Bridges are still being developed. It is possible that this restriction will not apply to those devices.

Of course students can respond with any networked device where they can use a browser. Many cell phones have browsers and Verizon cell phones have been used successfully in tests with the BQ program. However, the cell phone signal within most classrooms is usually rather weak. Also, most cell phone towers have a severely limited number of cell phones lines that they can support at one time. Although the tests involving cell phones in classrooms has been very successful, here has been no widespread adoption of the use of cell phones with the BQ program to date for the reasons mentioned previously.

Even when everyone is using web-based computers,   problems can occur. Some schools have set up their wired and wireless networks so that it is impossible for computers on one network to communicate with computers on another network. If this is the case and the instructor is running the BQ program by turning his or her computer into a server, if that computer is wired or wireless it may also be necessary for the student computers to be wired or wireless respectively.

Automatic Page Refresh – Details

When students are using a browser, none of their pages refresh automatically. However the student can use the usual browser buttons to refresh the current page or go back to previous pages. Every time a student answers a question, the next question is automatically sent to him or her. The student page indicates the answer given to the previous question as well as the student log in. The log in names are usually formed from the first initial of the first and last names along with the digits of the seat location that they entered. These log in values must be unique. thus if a student tries to log in twice, they would have to use a different first initial, last initial, and/or seat number.

There are a number of pages that refresh for the instructor: all the Anonymous views, the Histogram, the Results View, and the Spreadsheet View. If the you don't want your page to refresh, you can usually click on the Utilities View. When you return to one of the other views, you will automatically be on the same question.

Part B

Additional Notes -- BQ as a Stand-Alone Application

These notes may or may not duplicate some of the notes given previously.

To use the BQ program in this manner, it is recommended that your log in using the right side option of the log in page (mentioned earlier). You are then resented with a variety of choices. Most are self-explanatory and hovering over a link will usually display an explanatory sentence. The data from all previous session sis archived and this can be recovered If your computer crashes you can even start class back up right where you stopped when the crash occurred.

One big differenced is that you may want to create your question sets within the BQ program itself. Question sets created in this manner often pose a different question for each number rather than only posing a question every even number as was done in the pedagogy with Peer Instruction using ConcepTests from the ILT program.

Since the main difference is the creation of questions within the BQ program, only this part will be explained here.

Creating Questions Within the BQ program

If you want you can use the Default Question Set. This is a set of 19 multiple choice questions with no text to indicate what the question is or what choices are available. Both the question and the choices will need to be supplied by you verbally, on overhead transparencies, in printed material, by writing on the board, or in some other way.

If you choose to create a set of questions you will be presented with a page wher you can enter the questions. The explanations above the page are (hopefully) self-explanatory. Only a few things will be emphasized here.

- If you have created questions and their choices in a Word Processing program, you can copy and paste them into the form provided.
- If you have created questions and their choices in a Word Processing program and saved them to your computer, you can use this set of questions.
- Be sure to leave one blank line or the @@ symbol between questions.
- Do not number your questions. The program will number them for you.
- You can edit question sets you have created previously.

If you want for the question to be multiple choice, be sure the different choices begin on a new line and begin with
1.
2.
3.
4.
5. etc.
Otherwise the question will be a short answer question. (Yes, you can have short answer questions.)

You can use HTML

Almost anything you can do in a regular web page, you can do in a question set in BQ.. BQ is web-based. You can put in links. You can include pictures, physlets, etc. If yo need to include something with FORM tags you may need to have this material open in another window so that the FORM tags in the BQ program aren't impacted. However, careful work can avoid even this restriction.

The program is Open-source, so you are welcome to explore the php script behind the program and improve it and let me know of the modifications so I can share these with others.

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