Users Guide to IPAL – In-class Polling for All Learners

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Overview:

The IPAL project provides a free, open-source solution that will allow students to use a mixture of clickers and web-enabled devices (laptops, iPads, smartphones, etc.) to respond to in-class polling through a Moodle module. Research shows that the greater student involvement obtained through polling increases student learning and provides immediate feed-back to instructors, allowing for better response to student needs. Professors will be able to create their own questions, but our project will also provide ready-to-use peer-reviewed questions for the introductory physics course. The initial set of questions includes hundreds of questions from the ConcepTest questions authored by Physics Professor Eric Mazur and his group from Harvard University. These questions are housed at ComPADRE, a National Physics and Astronomy Digital Library (http://www.compadre.org/). The database will allow others to add questions for other courses/disciplines to this database of questions.

An analysis of the response data will help identify patterns that may indicate a student is in danger of dropping the class or quitting school. This will provide an opportunity for early intervention to increase course completion and retention rates. Authorized people at each school will be able to obtain the data and this analysis for that school or schools using the Starfish student retention solution (http://www.starfishsolutions.com/) will be able to request that these data be combined with other data making the Starfish analysis more accurate.

The IPAL module may be added to any Moodle site that is running Moodle version 2.1 or higher. The latest stable version of the IPAL module is available at http://www.compadre.org/ipal/webdocs/Plugin.cfm or you may contact Bill Junkin. A demo site has been set up and may be used (free of charge) for schools that are not running Moodle or for schools that have not yet moved to Moodle 2.x. This Users Guide is designed for using IPAL at your local school or at the demo site.
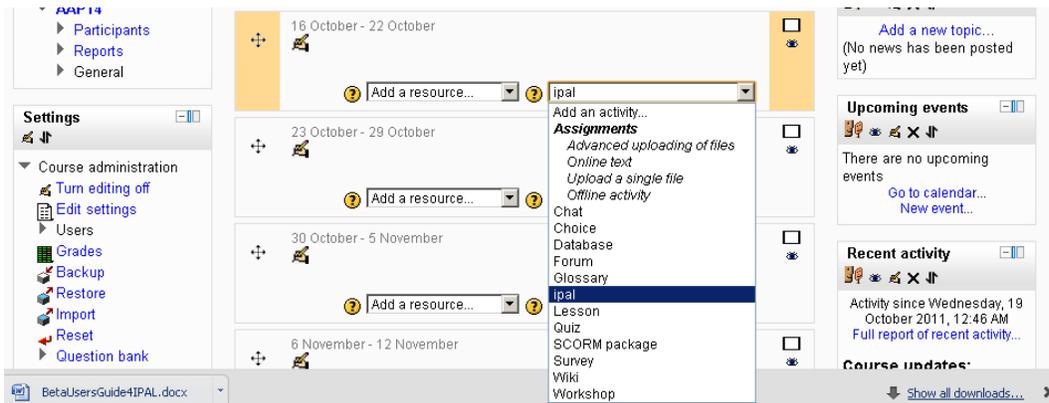
Using IPAL

A) Go to the Moodle site and log in. This will probably be a local Moodle site or else be the Moodle site at Eckerd College for other schools to use, http://socrates.eckerd.edu/moodle_ipal/
B) The course or courses in which you are enrolled will be presented to you. Click into your course.
C) For teachers, turn editing on (the button at the top right of the page).

For students, click on the polling activity created by your teacher and wait for a questions to be sent.

The rest of these instructions are for teachers only:

1) Select the place where you want to create a polling activity (an ipal session or instance). From the "Add an activity" drop-down menu, select ipal:

2) You will need to give the polling (ipal) session a name. The description is optional. The name will be what students see when they come to the site. When this is done, click "Save and Return to Course:"
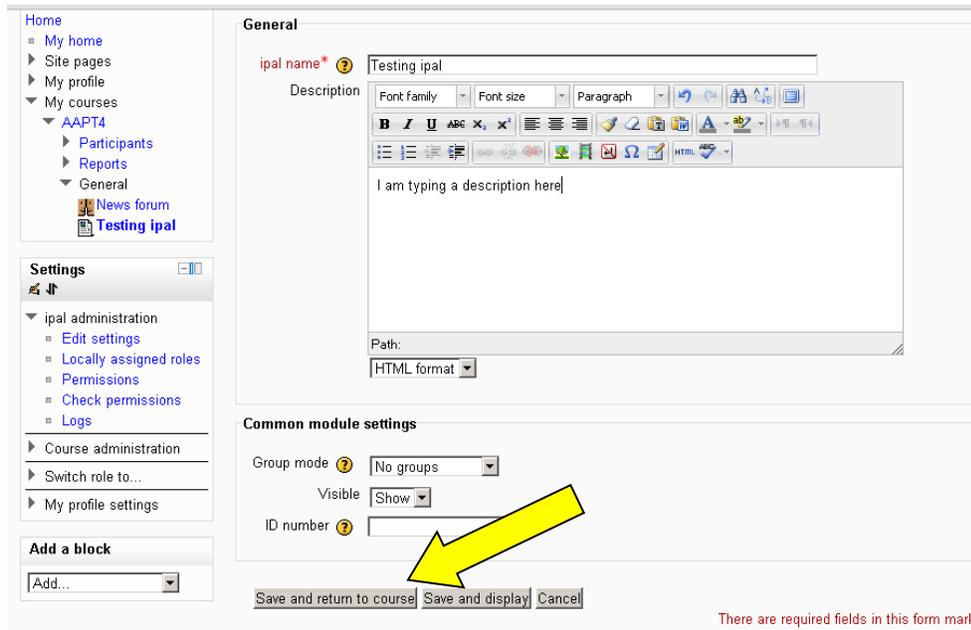
3) In the page that appears, the link to your ipal session will be displayed. However, you still need to select some questions to be used for polling. Please click on that link.

4) In the page that appears you can add or create some questions by clicking on the "Add/Change Questions" button. [Add/Change Questions]

5) If you have any questions created previously, they will be displayed on the right hand side of the page. There are buttons that allow you to create questions. Only multiple choice, true false, or essay (short text response) questions can be used.

6) On the right side above the area where questions would be listed, there is a button that will allow you to select questions from ComPADRE [Get questions from ComPADRE / Question bank contents [Show] [Hide]]. If you click on this button you will get to the ComPADRE site:
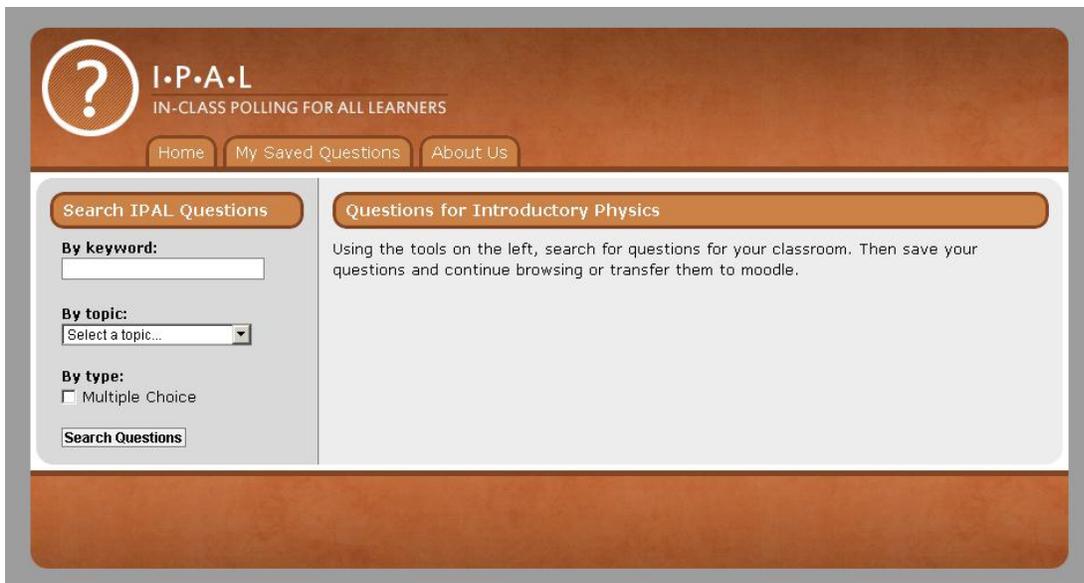

At this site there is a searchable (by topic and/or keyword) database of peer-reviewed questions. You may select as many or as few as you wish. When you are ready to "check out" there is a button that allows you to transfer these questions back to your Moodle course site. The questions will get added to your question databank and to the Moodle instance. (Moodle allows you to create various categories so you can keep questions organized. Thus there is an intermediate step allowing you to select the category.)

7) The questions from ComPADRE are added to your ipal instance automatically. If you have other questions in the databank, you can add them by using the check box method or the left arrow method:

When questions have been added to an ipal instance you can remove them by clicking on the "x" in front of the question. The "pen in hand" icon (called the "Update" icon) allows you to change the question. There are also move icons and preview icons associated with each question allowing you to see the full question or move the question to a new location in the list.

8) Once you have created or selected the desired questions, you can click on the "Start polling with ..." link to return to the page where you can start polling. (At any time you can get back to the course main site by clicking on the course title, either in the breadcrumbs at the top or the links on the left side.)
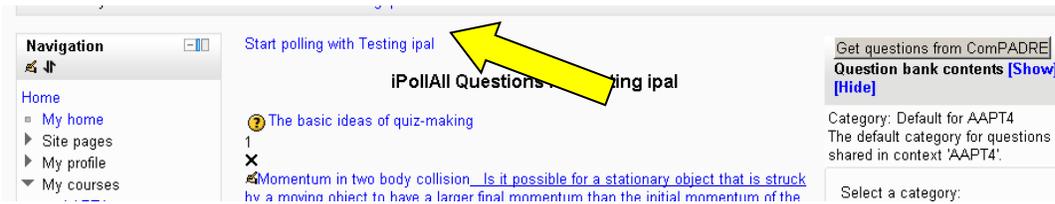
At this page you can select any of the questions and send the question to make it the active question. You may do this in any order. When students start answering questions, the graph below will display an anonymous histogram of their responses.
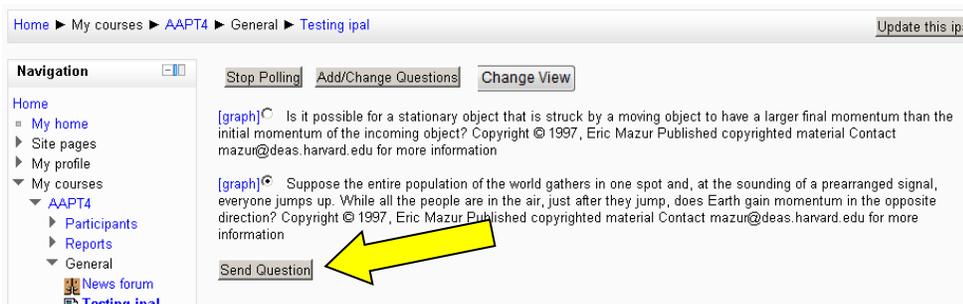
They can continue to respond and change their answers to that question as often as they wish until you click on the "Stop Polling" button or "Send" a different question. Thus, the teacher can control when the students can and cannot answer each question by using the "Start Polling,", "Stop Polling," and "Send Question" buttons appropriately.

The available graphs:

a. Beside each question is a "graph" link. When you click on that link, a static graph of the responses to that question at that point is displayed.

b. Below the questions is a dynamic graph. It is constantly updated as students answer questions. In the default view, it displays the number of responses received so far and the answers to the current active question only. If the question is multiple choice or true false, the histogram graph is displayed. If the question is an "essay" type of question then the response (text) answers of the students are displayed anonymously, one answer per line. However, when the teacher clicks on the "Change View" button (the "Change View" button doesn't say "Change View". Please see #c below), the graph changes to a dynamic spreadsheet. This spreadsheet shows the names of the students and the latest answer to all the questions. If a question is sent twice the graph (histogram or responses) showing the answers to the active question only displays data received from the last time the question was sent. However, the spreadsheet view shows the most recent answers sent for any and all questions, including data from the first time the question was sent (if the student didn't give and answer when the question was sent a second time).

c. The "Change View" button doesn't actually say "Change View" but says what the view in the window will change to if that button is clicked. Thus, clicking the "Change view to Spreadsheet" button will change the view to the spreadsheet view; clicking the "Change view to Histogram"

will change the view to the histogram view; and clicking the "Change view to Responses" will change the view to the responses (text answers) view. It is a toggle button, changing the display back and forth from the histogram or response view anonymously displaying the answer to just one question to displaying the answers in spreadsheet form. The response (text) view is only available if the question that has been sent is an essay question.

    d. In "Peer Instruction" it is necessary to send the same question twice and sending the same question again may be desirable with other pedagogies. If the teacher sends the question the second time, the new histogram or response view for the active question does not contain any of the data from the first time the question was sent. In other words, when the "View" is set to display the answers from only the active question (and not the spreadsheet view), if a question is sent a second time, none of the responses from the prior time will be displayed.

    e. Below the dynamic graph described in b), c) and d) above is a link that the teacher can click on to provide a pop-up window containing just this dynamic graph. The graph that is displayed is identical to the dynamic graph that is on the IPAL main page below the questions. This page can be resized and moved around as desired. If the teacher is using a data projector to display the computer screen in extended desktop mode, this graph can be moved to and from the screen that the students can see to enable the desired pedagogy.

    f. The spreadsheet view can be obtained during or after class. When it is displayed, its contents can be copied and pasted into a spreadsheet, such as Excel.

9) If you leave the site, when you return to your course, if you click on the link for the ipal instance, you will see the questions you selected and you may start polling. Students see the same link, but when they click on that link, all they see is the question (if any) that you have sent them.

10) Anonymous polling (developed by the DePauw Open Source group): When you create the ipal instance there is an "IPAL type" drop-down menu that allows you to do anonymous polling. The default is "non-Anonymous." If the teacher selects "Anonymous" then no student names will be displayed in the "Spreadsheet View." Thus, the responses are completely anonymous and the teacher cannot find out which student gave which response. This setting cannot be changed once students have started responding to questions.

11) Using "clickers" for polling: Students may respond with web-enabled devices and/or "clickers." Currently the TurningPoint ResponseCard clickers are the only model that is supported. When the ipal instance is being created there is an "Enable clickers" drop-down menu with the default being "No." This must be changed to "Yes" to activate this feature. Each brand of clicker has its own receiver to receive responses from students. This receiver must be plugged into a PC in the room where polling is going on to enable responses from clickers. There is an IPAL utility that allows students to register their clicker. Responses from registered clickers are displayed with the students' names; responses from unregistered clickers are displayed with the clicker ID as the name. The responses from clickers are displayed together with all other responses. Both clicker and web-enabled responses are allowed or blocked with the "Start Polling" and "Stop Polling" buttons. Please download the "Clicker Utility Guide" (separate document) for information about installing the clicker utility and using clickers with ipal.

We are offering to host (for free) course sites for everyone wanting to try out this system. This offer is valid until June of 2013. We have the ipal module ready to be downloaded and installed in your local Moodle installation at your school if you are running Moodle version 2.x (it will not run in Moodle version 1.9 or

lower). For schools that don't use Moodle, we have a stand-alone version that you can install locally. The analysis of what polling response patterns (such as not answering questions, answering only a few questions, always answering incorrectly, etc.) which indicate that a student is more likely to be at risk is not yet available, since we don't yet have the needed data to obtain the desired correlations.

There are numerous enhancements, utilities, and features that we plan to add to the program very soon. The current features include:

General Features:
- Start and stop polling with a click of a button.
- Adding questions (Click on Add/Edit Questions button)
  - From questions already in the question bank
  - From questions from questions that the teacher creates
  - Obtain ready-to-use questions from ComPADRE
  - A generic multiple-choice and generic essay (short answer) question is created automatically. These can be used when the question is given verbally or in another program.
  - A "question" link beside each question which displays what students will see. (In the Add/Select question page, this link is the preview icon 🔍)
  - The questions can be sent in any order.
  - Each time the question is sent, it clears out the histogram or response view but not the data in the spreadsheet view.

- If a student responds more than once to a "Sent" question, only the last response is displayed.
- Responses can come from students' web-enabled devices and/or clickers in the same session.

Histogram features
- A dynamic, real-time histogram view (anonymous) of student responses to multiple choice and true/false questions.
- A "graph" view beside each question which displays a static histogram for responses to that question
- A link below the dynamic histogram which displays the histogram in a new window/tab
- An indication "Total Responses" of the number of responding students out of all who have responded to any of the polling questions
- You can disable the ability of students to submit or change answers by clicking the "Stop Polling" button. When you send a question again, there is a new histogram waiting for answers.
- When an essay question is sent, the "histogram" view no longer displays a histogram, but displays the text responses.

Responses (text answers to essay questions) features
- A dynamic, real-time responses view (anonymous) of student responses to "essay" questions.
- Each student's answer is on a separate line in the window.
- A "graph" view beside each essay question which displays a static list of the last text response by each student to that question
- A link below the dynamic window which displays the responses in a new window/tab
- An indication "Total Responses" of the number of responding students out of all who have responded to any of the polling questions
- You can disable the ability of students to submit or change answers by clicking the "Stop Polling" button. When you send an essay question again, there is a new window waiting for responses.
- When a multiple choice or true/false question is sent, the "response" view no longer displays responses but displays a histogram.

Spreadsheet features:

- A dynamic, real-time spreadsheet view showing student names and all student responses to all questions
- A link below the dynamic spreadsheet view that displays the spreadsheet view in a new window/tab.
- You can disable the ability of students to submit or change answers by clicking the "Stop Polling" button. All data is retained and available when you "Start Polling" again. (This can work as a timer.)
- At any time you can drag over the spreadsheet, copy it, and paste it into a program like Excel.(You may have to use "Paste special – unicode text")

Some collaborating groups are working on:

1. An IPAL app for both the iPhone and the Droid. (The current version works fine when students use a browser on their smart phone, but an app will allow quicker log in and other good features.)
2. Running the program from the instructor's laptop computer.
3. Including a connection between IPAL and the Moodle grade book.

Our script is free and open-source and funded as one of the NGLC (Next Generation Learning Challenge) grants administered through Educause and funded by the Bill Gates Foundation and the Hewlett Foundation (http://www.educause.edu/nglc). The IPAL project is one of 29 projects funded nationally in the First Wave of NGLC grants.

It is our intention that the entire IPAL module is so intuitive that you feel that you have wasted your time in reading this Users Guide. We welcome suggestions about improvement or changes to the IPAL module and/or its presentation in this Users Guide. Bill Junkin (junkinwf@eckerd.edu, (727) 864-8239)