

# H-ITT ME WITH YOUR BEST SHOT: REAL-TIME ASSESSMENT USING A CLASSROOM RESPONSE SYSTEM

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After learning of classroom response systems at a conference, several colleagues at my institution expressed an interest in acquiring such a system. Not being familiar with this technology, I approached our Computing and Communications (C & C) department on campus. I learned that this technology was already being widely used on campus. The campus was exclusively employing the system from the H-ITT company, Hyper-Interactive Teaching Technology. In preparing my proposal, I researched two vendors, H-ITT and the InterWrite system from GTCO. In the proposal to the University Librarian, both systems were put forth; however, a strong preference for the H-ITT system was indicated. Acquiring a system already in use on campus meant students would be familiar with it and the library would have technical support from the Computing and Communications department.

H-ITT is a classroom response system that allows real-time interaction between the class and the instructor. The librarian asks the class a multiple choice or true and false question using the software, and the students respond using 'clickers,' two-way remote control devices. It engages students through immediate, anonymous feedback.

The library purchased its classroom response system in 2005. It was installed immediately and began being used heavily in the Fall of that same year. Once the system was installed, the reference/instruction librarians, along with faculty on campus, received training from C & C. We use it for one-shot bibliographic instruction sessions for undergraduate and graduate level classes that are either 50 minutes or 90 minutes long.

Our purpose for obtaining the 'clicker' system was

two-fold. We wanted to engage the students, to get them responding to our questions during class. Second, we use the system as an assessment tool. We wanted to go beyond knowing if the students thought the library session was useful to knowing if they were truly learning what we were teaching. We wanted to know what skills we should focus on and what was easily understood by the students that we did not have to emphasize.

The H-ITT system is comprised of three components:

1. The receiver(s),
2. The remote controls, and
3. The software.

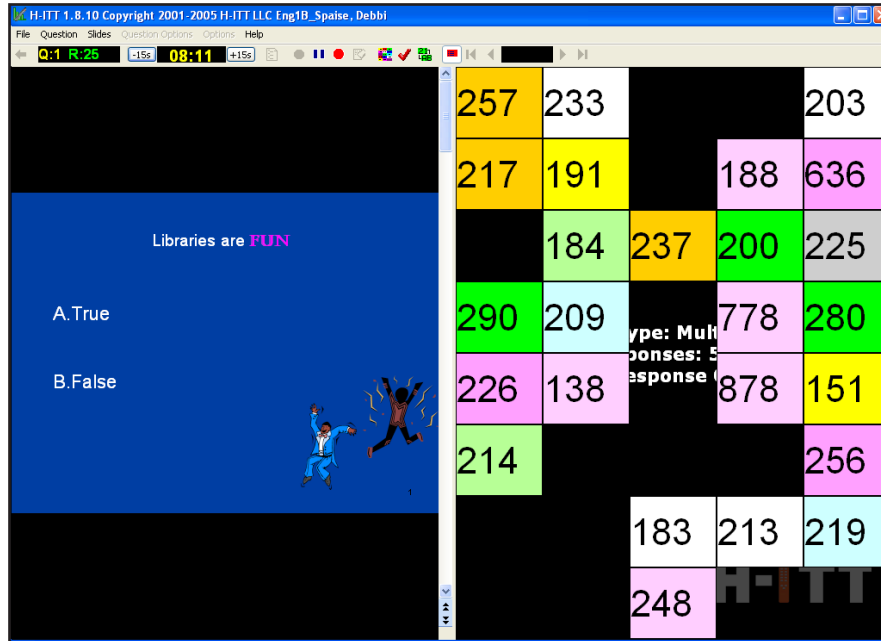
The number of receivers needed is determined by the number of students that will be 'answering' to each one. It is recommended there be approximately one receiver per twenty students. The software consists of two separate modules: the acquisitions module and the analyzer module. The acquisitions module is used to acquire responses from the students. The class can see this module during the instruction session, thereby allowing everyone to see the results of the class as a whole. The analyzer module provides the librarians with the results of the questions; it is not visible to the students. Using the analyzer module, the librarian receives a file that contains the answer key, students' points, individual student responses, the question analysis, and the roster of students.

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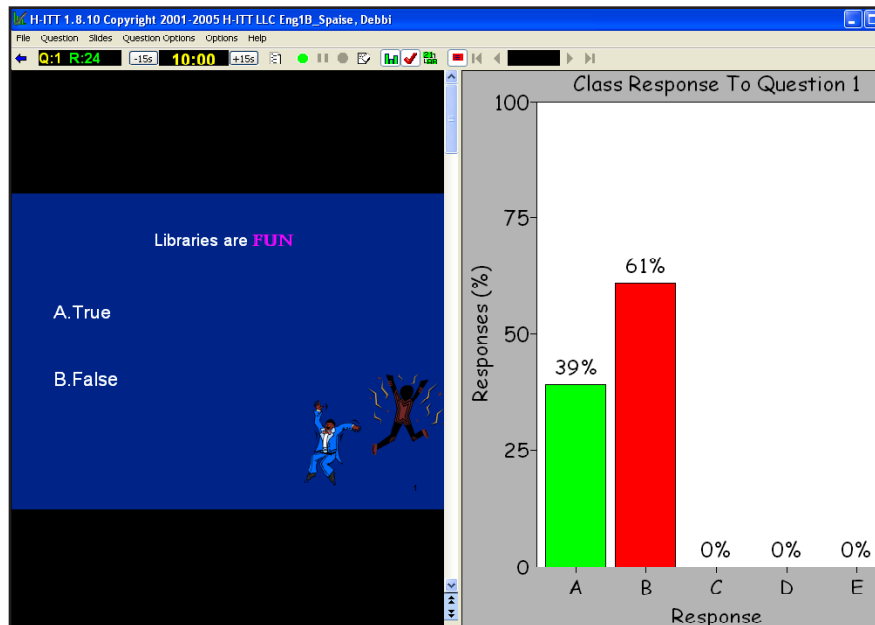
### Figure 1: Individual student responses, Acquisitions module

Each 'clicker' is identified with a number. When the student responds, his/her number will always appear in the same location on the screen and in the same color.



### Figure 2: Class Results, Acquisitions module

The green indicates the correct answer. In this example, 61% of the class answered the question incorrectly.



Below is a sampling to the questions we asked during the past year of using the system:

A primary source on Witchcraft would be:

- a. scholarly article
- b. video / film
- c. dissertation
- d. speech
- e. biography

Who is the modern day Dr. Jekyll / Mr. Hyde?

- a. Tom Cruise
- b. Howard Dean
- c. Dr. Kevorkian
- d. Jimmy Carter

Which call number comes first on the shelf?

- a. DS769.8 L3
- b. DS769.8 L26
- c. DS769.8 L194

What type of page is this? [www.salon.com/books/it/1999/09/13/machtest/](http://www.salon.com/books/it/1999/09/13/machtest/)

- a. Advocacy
- b. Informational
- c. Business / Marketing
- d. News
- e. Personal & Chat/Blogs

**Figure 3: Answer key, Analyzer module**

This is the answer key that is available through the Analyzer module. For this example, five of the same classes were taught using the H-ITT system.

| Class  | Question | Responses           | Correct Answer(s) | Points    | Average Points | YTD Points |
|--|----------|---------------------|-------------------|-----------|----------------|------------|
| 1 Tue<br>11 Oct 05<br>10:27 AM<br>[Edit] [X] | 1        | 17(9,8)             | A                 | 3         | 2.06           | 3          |
|  | 2        | 19(7,12)            | C                 | 3         | 1.74           | 6          |
|  | 3        | 24(23,1)            | B                 | 3         | 2.92           | 9          |
|  | 4        | 22(19,3)            | A                 | 3         | 2.73           | 12         |
|  |          | <b>Class Total:</b> |                   | <b>12</b> | <b>9.66</b>    |            |
| 2 Tue<br>11 Oct 05<br>11:55 AM<br>[Edit] [X] | 1        | 12(9,3)             | B                 | 3         | 2.50           | 15         |
|  | 2        | 8(4,4)              | C                 | 3         | 2.00           | 18         |
|  | 3        | 9(8,1)              | B                 | 3         | 2.78           | 21         |
|  | 4        | 13(2,11)            | B                 | 3         | 1.31           | 24         |
|  |          | <b>Class Total:</b> |                   | <b>12</b> | <b>8.38</b>    |            |
| 3 Wed<br>25 Jan 06<br>01:03 PM<br>[Edit] [X] | 1        | 14(6,8)             | A                 | 3         | 1.86           | 27         |
|  | 2        | 18(11,7)            | C                 | 3         | 2.22           | 30         |
|  | 3        | 15(12,3)            | B                 | 3         | 2.60           | 33         |
|  |          | <b>Class Total:</b> |                   | <b>9</b>  | <b>6.70</b>    |            |
| 4 Wed<br>25 Jan 06<br>02:02 PM<br>[Edit] [X] | 1        | 15(7,8)             | A                 | 3         | 1.93           | 36         |
|  | 2        | 16(9,7)             | C                 | 3         | 2.13           | 39         |
|  | 3        | 18(13,5)            | B                 | 3         | 2.44           | 42         |
|  | 4        | 16(12,4)            | B                 | 3         | 2.50           | 45         |
|  | 5        | 17(10,7)            | A                 | 3         | 2.18           | 48         |
|  |          | <b>Class Total:</b> |                   | <b>15</b> | <b>11.22</b>   |            |
| 5 Fri<br>27 Jan 06<br>09:42 AM<br>[Edit] [X] | 1        | 16(5,13)            | A                 | 3         | 1.38           | 51         |
|  | 2        | 15(10,5)            | C                 | 3         | 2.33           | 54         |
|  | 3        | 15(7,8)             | B                 | 3         | 1.93           | 57         |
|  | 4        | 17(12,5)            | A                 | 3         | 2.41           | 60         |
|  |          | <b>Class Total:</b> |                   | <b>12</b> | <b>8.06</b>    |            |
|  |          | <b>Course Total</b> |                   | <b>60</b> | <b>19.50</b>   |            |

**Figure 4: Individual Student Points, Analyzer Module**

This identifies each student by clicker number and tells the instructor the percentage of correct answers each individual student received.

| #                           | Remote ID | Raw       | Max | Percent | Fraction |
|-----------------------------|-----------|-----------|-----|---------|----------|
| 1                           | 199636    | 35        | 60  | 58.3%   | 0.583    |
| 2                           | 200224    | 13        | 60  | 21.7%   | 0.217    |
| 3                           | 200225    | 37        | 60  | 61.7%   | 0.617    |
| 4                           | 200256    | 15        | 60  | 25.0%   | 0.250    |
| 5                           | 200257    | 10        | 60  | 16.7%   | 0.167    |
| 6                           | 200280    | 12        | 60  | 20.0%   | 0.200    |
| 7                           | 200290    | 28        | 60  | 46.7%   | 0.467    |
| 8                           | 200642    | 43        | 60  | 71.7%   | 0.717    |
| 9                           | 200769    | 28        | 60  | 46.7%   | 0.467    |
| 10                          | 200778    | 14        | 60  | 23.3%   | 0.233    |
| 11                          | 200878    | 7         | 60  | 11.7%   | 0.117    |
| 12                          | 201138    | 21        | 60  | 35.0%   | 0.350    |
| 13                          | 201151    | 15        | 60  | 25.0%   | 0.250    |
| 14                          | 201158    | 9         | 60  | 15.0%   | 0.150    |
| 15                          | 201159    | 6         | 60  | 10.0%   | 0.100    |
| 16                          | 201168    | 19        | 60  | 31.7%   | 0.317    |
| 17                          | 201173    | 22        | 60  | 36.7%   | 0.367    |
| 18                          | 201177    | 38        | 60  | 63.3%   | 0.633    |
| 19                          | 201183    | 7         | 60  | 11.7%   | 0.117    |
| 20                          | 201184    | 15        | 60  | 25.0%   | 0.250    |
| 21                          | 201188    | 20        | 60  | 33.3%   | 0.333    |
| 22                          | 201191    | 44        | 60  | 73.3%   | 0.733    |
| 23                          | 201201    | 14        | 60  | 23.3%   | 0.233    |
| 24                          | 201203    | 26        | 60  | 43.3%   | 0.433    |
| 25                          | 201233    | 17        | 60  | 28.3%   | 0.283    |
| 26                          | 201214    | 10        | 60  | 16.7%   | 0.167    |
| 27                          | 201217    | 21        | 60  | 35.0%   | 0.350    |
| 28                          | 201219    | 14        | 60  | 23.3%   | 0.233    |
| 29                          | 201226    | 10        | 60  | 16.7%   | 0.167    |
| 30                          | 201233    | 25        | 60  | 41.7%   | 0.417    |
| 31                          | 201234    | 30        | 60  | 50.0%   | 0.500    |
| 32                          | 201237    | 8         | 60  | 13.3%   | 0.133    |
| 33                          | 201240    | 26        | 60  | 43.3%   | 0.433    |
| 34                          | 201242    | 36        | 60  | 60.0%   | 0.600    |
| 35                          | 201243    | 10        | 60  | 16.7%   | 0.167    |
| 36                          | 201248    | 7         | 60  | 11.7%   | 0.117    |
| <b>Max. Possible Points</b> |           | <b>60</b> |     |         |          |

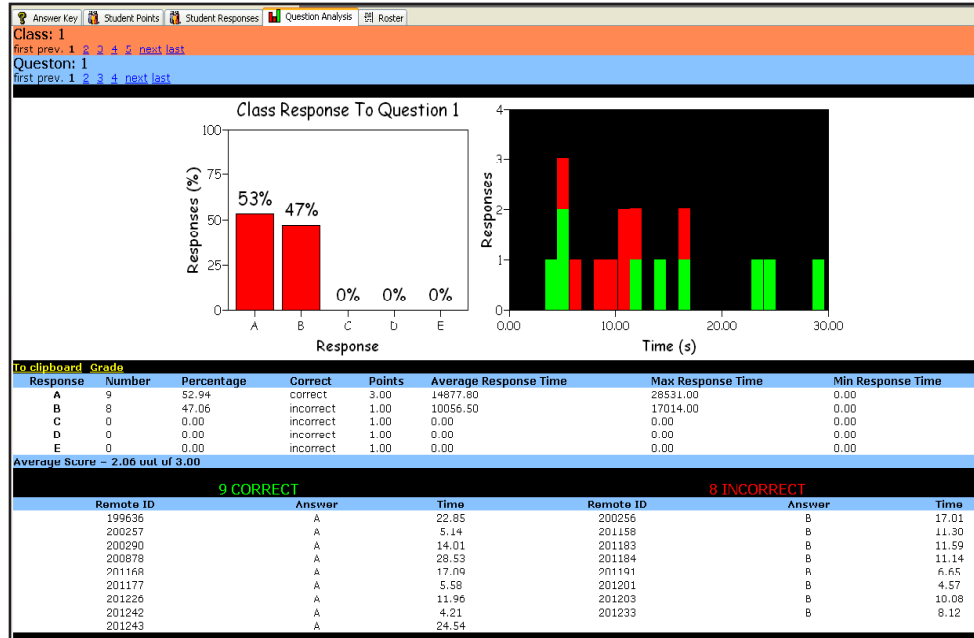
**Figure 5: Individual student responses, Analyzer module**

This tab identifies the specific answer each individual student gave for each question.

| #  | Remote ID | C1 Q1 | C1 Q2 | C1 Q3 | C1 Q4 | C2 Q1 | C2 Q2 | C2 Q3 | C2 Q4 | C3 Q1 | C3 Q2 | C3 Q3 | C4 Q1 | C4 Q2 | C4 Q3 | C4 Q4 | C5 Q1 | C5 Q2 | C5 Q3 | C5 Q4 |   |   |
|----|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|---|
| 1  | 199636    |       | A     | C     | B     | A     |       |       |       | B     | C     |       | B     | C     | B     | B     | B     | B     | A     | B     | A |   |
| 2  | 200224    |       |       | A     | B     | B     |       |       |       |       |       |       | A     | C     | B     | B     | B     | C     | D     | A     |   |   |
| 3  | 200225    |       |       |       |       |       |       |       |       |       |       | C     | B     | A     | A     | B     | B     | A     | B     | A     |   |   |
| 4  | 200256    | B     |       | B     | A     | B     | C     | C     | A     |       |       |       |       |       |       |       |       |       |       |       |   |   |
| 5  | 200257    | A     | A     | B     | A     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |   |
| 6  | 200280    |       |       |       |       | B     | C     | B     | B     |       |       |       |       |       |       |       |       |       |       |       |   |   |
| 7  | 200290    | A     |       | B     | A     | A     |       |       |       | B     | C     | A     | A     | C     | A     | B     | B     | B     | A     |       | B |   |
| 8  | 200642    |       | C     | B     | A     | A     | C     | B     | B     | A     | A     | B     | B     | C     | B     | D     | A     | B     | C     | D     | B |   |
| 9  | 200769    |       | C     | R     | A     |       |       |       |       | A     | C     | R     | C     | A     | R     | A     |       |       |       |       |   |   |
| 10 | 200778    |       |       |       |       |       |       |       |       |       |       |       | B     | A     | B     |       | A     | B     | E     | E     | A |   |
| 11 | 200878    | A     |       | C     | A     |       |       |       |       | A     | A     | A     | B     | A     | A     | B     |       |       |       |       |   |   |
| 12 | 201138    |       |       |       |       | B     |       |       | A     | A     | A     | B     | A     | A     | B     | B     |       |       |       |       |   |   |
| 13 | 201151    |       | A     | B     | A     | B     | A     | B     | A     |       |       |       |       |       |       |       |       |       |       |       |   |   |
| 14 | 201158    | B     | A     | B     | A     |       |       |       |       |       |       |       |       |       |       |       |       |       |       | D     | B |   |
| 15 | 201159    |       |       |       |       |       |       |       |       |       |       |       | A     |       |       |       | B     |       |       |       |   |   |
| 16 | 201168    | A     | A     | B     | A     |       |       |       | A     |       |       |       | B     | C     | B     | B     | A     | A     | C     | B     | B |   |
| 17 | 201173    |       |       |       |       |       |       |       |       | B     | A     |       | B     | C     | B     | B     | A     |       | C     | D     |   |   |
| 18 | 201177    | A     | A     | B     | A     | B     |       | B     | A     | B     | C     | B     | B     | C     | B     | D     | A     |       |       |       | A |   |
| 19 | 201191    | D     | D     | A     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |   |
| 20 | 201184    | B     | C     | B     | B     |       |       |       |       |       |       |       |       |       |       |       | A     |       | D     | A     |   |   |
| 21 | 201188    | C     | B     |       |       |       |       |       |       | B     | C     | B     | B     | A     | A     | B     | B     |       |       |       |   |   |
| 22 | 201191    | B     | C     | B     | B     | B     | A     | B     | A     |       | C     | B     | A     | A     | B     | B     | A     |       | C     | B     | A |   |
| 23 | 201201    | B     | A     | B     | A     | A     | A     | B     | A     |       |       |       |       |       |       |       |       |       |       |       |   |   |
| 24 | 201203    | B     | A     | B     | A     | B     | C     | B     | A     |       |       |       |       |       |       |       |       |       | B     | C     | D | A |
| 25 | 201213    |       |       |       |       |       |       |       |       |       |       | C     | B     | B     | C     | B     | D     | A     |       |       |   |   |
| 26 | 201214    |       | B     | A     | B     |       |       |       | A     |       |       |       |       |       |       |       |       |       |       |       |   |   |
| 27 | 201217    |       |       |       |       |       |       |       |       | B     | C     | B     |       |       | B     |       | B     | B     | C     | B     | A |   |
| 28 | 201219    |       |       |       |       |       |       |       |       |       |       |       | C     | A     | A     | B     | D     | A     |       |       |   |   |
| 29 | 201226    | A     | A     | B     | A     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |   |
| 30 | 201233    | B     | A     | B     | A     |       |       |       |       | B     | A     | A     | A     | A     | B     | B     | B     | B     | B     | B     | A |   |
| 31 | 201234    |       |       |       |       | B     | A     | B     | A     | A     | A     | A     | B     | C     | B     | B     | B     | B     | D     | C     | B |   |
| 32 | 201237    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |   |
| 33 | 201240    |       | A     | B     |       |       |       |       |       |       | A     | C     | B     |       |       | A     | B     | A     | A     | C     | A |   |
| 34 | 201242    | A     | C     | B     | A     | A     |       |       |       | B     | A     | B     |       | C     | A     | B     | B     | B     | C     | B     | A |   |
| 35 | 201243    | A     | A     | B     | A     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |   |   |
| 36 | 201248    |       |       |       |       |       |       |       |       | A     | A     | B     |       |       |       |       |       |       |       |       |   |   |

## Figure 6: Question Analysis, Analyzer module

This graph shows the instructor how many students got each question correct or incorrect. This identifies the students' strong areas, weak areas, as well as which questions may be poorly written.



There are both advantages and challenges involved in using a classroom response system. One of the greatest advantages from a student's perspective is the anonymity it provides. When students respond, it is completely anonymous. This allows students who would otherwise be reluctant to express themselves to see that they may not be the only person having difficulty. For the instructor, a system such as this increases student involvement, requiring the students to participate in the class. An additional advantage for the instructor is the immediate feedback s/he receives from the system. Instantly the instructor and the student see the comprehension level of the class.

Using a classroom response system also poses some challenges. Developing good, conceptually-based questions can be difficult and time consuming. The questions should also be created in advance. The system is not best suited for questions asked on the fly. Asking questions while teaching can also slow the pace of the class slightly. Receiving immediate feedback on the students learning further implies that, as the instructor, you are going to respond to their level of comprehension and adjust the content of the instruction accordingly. Therefore, using a classroom response system works best with a flexible teaching style.

Overall, the clickers were very well received by both students and faculty. Students felt they paid more attention when they knew they were going to be asked questions about the material. They also recognized that the anonymity would make students feel less self-conscious when answering questions. Faculty also felt they made a big

impression on their class. Generally, the system did help us accomplish our goals. The students were more engaged and as the librarians we learned where our instruction needed to be focused.

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