Project: Polling/assessment solution evaluation
Date: November 2014-May 2015
Report: May 2015

Objective: To re-evaluate the standardized classroom polling solution supported by Calvin Information Technology / Teaching & Learning

Reason for evaluation: T&L team received a project concept proposal from Assistant Professor Victor Norman requesting CIT re-evaluate our current eInstruction/CPS clickers solution (October 28, 2014).

Stakeholders: Calvin faculty, staff & students, Calvin Information Technology, T&L

Project team: Daniel Christian (T&L), Krista Spahr (T&L)

Executive summary: After many months of work, the CIT Teaching & Learning team has concluded that, at this time, transitioning from one radio-frequency (RF) based solution to another is not warranted. Instead, we propose Calvin take steps toward providing a “Bring Your Own Device” (BYOD)-based solution within the next three years. Implementing a BYOD-based solution relies heavily upon the work being done by Calvin Information Technology to provide a campus-wide, robust, wireless infrastructure (slated to be completed in 2018). This report outlines the reasoning behind this decision.

Project deliverables

- Recommendation from project team
- Proposed 3-year plan
- List of alternative solutions an instructor could potentially try independently (without CIT support)
- Matrix/framework outlining the features & functionality to be considered for a future polling solution (Appendix A)
**Outstanding Issues:** While ease of use and reliability remain a concern, we have determined these issues will be best addressed by a solution that is delivered solely online, does not rely on radio-frequency technologies (receivers, channels, connectivity, etc…), and instead, is BYOD-based.

Calvin College is currently not equipped to support such a solution on a campus-wide basis. Alternatively, other leading contenders, such as Turning Technologies and i>Clicker, also utilize either (1) wireless/BYOD or (2) radio-frequency (RF) technology. Therefore, to switch to another RF solution at this time would be a “lateral” move, at best, because CIT would need to invest significant resources for a similar *short-term* RF-based solution.

And while these two RF contenders also offered integration with our LMS (Moodle), the integration with Moodle was still quite cumbersome. We also need to keep in mind that “Moodle integration” is not the same as “Moodlerooms integration” which comes with it’s own QA process and costs.

**Unresolved issues: What couldn’t be done?**

When investigating alternative polling solutions, we did not find another RF-based solution that offered significant benefit beyond the features and functionality of eInstruction. While we recognize the concerns raised by Professor Norman, we did not find a RF-based product that surpassed eInstruction in its ability to resolve current issues.

Teaching & Learning also had a number of conversations with various groups regarding the master plan, campus learning spaces & next-generation smart classrooms. In turn, these conversations prompted two larger questions:

1. What role does a polling solution play in the evolving learning spaces on campus -- especially in light of the increasingly prevalent BYOD-based trends as well as with changes that involve assessment and data-driven instruction?
2. What technology &/or infrastructure needs to be in place in order to pursue these options?

**Adoption Strategy:** None. At this time, we recommend CIT continue to support the *Classroom Performance System (CPS)* by eInstruction as our supported polling/assessment on campus.

**Recommended plan:** We are not currently recommending an alternative product for adoption. However, we did outline a 3-year plan for moving forward which relies upon the presence of a campus-wide wireless infrastructure.

Based on information provided by the College, Calvin College plans to provide a campus-wide wireless infrastructure in 2018. Therefore, it will be more feasible for CIT to support an alternative wireless/BYOD-based polling solution starting with the 2018-2019 academic year. We have drafted a 3-year plan outlining a potential polling/assessment solution (replacement).
Over the next three years:

- CIT is committed to providing a stable, campus-wide wireless infrastructure which will permit CIT to implement and support a BYOD-based polling solution.
- The Teaching Spaces Team will explore the role a polling solution might play in our evolving learning environments on campus.
- The Teaching & Learning Team will explore potential solutions that will allow for better integration with our learning management system (currently Moodle) -- especially the gradebook -- as well as integration with Microsoft PowerPoint.
- The Teaching & Learning Team will continue to explore ways wireless polling can contribute to assessment as well as data-driven instruction.
- Faculty will be sought out to help pilot potential solution(s) during the outlined 3-year plan.

Potential 3-year plan (2015-2018): Outline of how a potential 3-year plan could play out

2015-2016
- Fall 2015
  - CIT/Teaching Spaces Team to continue to work on implementing a robust wireless infrastructure (that will enable us to offer a BYOD-based polling solution)
  - T&L will “pulse check” Turning Technologies, i>Clicker, and possibly other vendors, to see if any solutions have evolved to offer more seamless integration
- Spring 2016
  - Explore possible pilot opportunities for Fall 2016

2016-2017
- Fall 2016
  - Pilot a BYOD-based solution in (1) classroom with an Aerohive-based wireless access point
- Spring 2017
  - Pilot a BYOD-based solution in additional classroom(s)

2017-2018
- Fall 2017
  - Possible roll-out of campus-wide solution
Current solution/vendor: eInstruction Classroom Performance System (CPS)

Overview of current solution: [http://www.calvin.edu/it/academic/tools/clickers/](http://www.calvin.edu/it/academic/tools/clickers/)
The Classroom Performance System (CPS) by eInstruction is a wireless response system. With this powerful system you can ask multiple choice and numeric questions, measure comprehension, gather opinions, administer tests and quizzes and even take attendance. Calvin College has two models for the clickers--the Higher Ed model & the classroom model.

Higher Ed model: There are a number of instructors who are currently utilizing eInstruction/CPS successfully in their classrooms. The Service Desk has implemented a system for ensuring compatibility with software plug-ins and deploying the eInstruction software to classrooms and faculty computers via the Calvin Network. We have also worked extensively with the campus store to carry the CPS Pulse units for students to purchase.

The following steps outline the steps for instructors and students when deploying the Higher Ed model for delivery.

Instructors:
1. Submit a [request to the Campus Store](http://www.calvin.edu/it/academic/tools/clickers/) to have clickers available for their students to purchase next semester. ([Due date for textbook adoptions also apply to clicker requests.](http://www.calvin.edu/it/academic/tools/clickers/))
2. Contact the HelpDesk (x6-8555) to request CPS software/hardware be installed in the appropriate classroom(s).
3. View [video tutorials and documentation](http://www.calvin.edu/it/academic/tools/clickers/) to prepare CPS course, lessons, questions, etc.
4. Register course(s) using CPSonline.
5. Provide students with a class key so they are able to register their Pulses in a course. (The class key is provided when you register your course(s) using CPSonline.)

Students:
1. Purchase a CPSPulse (clicker) from the Campus Store.
2. Purchase an enrollment code from the CPSonline when you register your CPSPulse (clicker) in your course(s).
3. View [video tutorials and documentation](http://www.calvin.edu/it/academic/tools/clickers/) about creating a CPS account and registering your CPSPulse.
4. Register your Pulse in the appropriate courses. (Note: The instructor will need to provide the students with a key before they are able to register their Pulse in a course.)

Bagged classroom set: A bagged classroom set has a receiver and 30 handheld Gen2 RF remotes (clickers). These sets must be reserved in advance, and picked up and dropped off at CIT. Currently, there are a number of instructors who currently utilize the bagged set of clickers on an as needed basis.
**Project timeline**

**November 2014**

*Surveyed faculty* - Sent an informal survey (via email) that sought input from instructors who have used the CPS clickers asking they provide us with some basic information and feedback regarding eInstruction/CPS; more importantly, the pedagogical objectives they want to achieve by using an assessment/polling solution. (Excerpt: “At this time we are looking for proactive feedback and objectives that are not tied to a specific solution or vendor. We want to know what you desire or want in a solution”). Responses were due on Wednesday, November 26.

**December 2014**

*Aggregation of feedback* - As we compiled the feedback, we looked for common themes regarding features and functionality that seemed to rise to the top. Noting some of these themes, we set out to survey the current educational landscape to see what alternative products and vendors are available.

**December 2014-April 2015**

*Evaluation of potential vendors* - Based on the aggregated feedback from faculty, we decided to explore the most viable options. Two potential “front-runners” in this type of educational polling technology are i>Clicker and Turning Technologies. Turning Technologies is the company that purchased eInstruction and now supports the eInstruction line of products. We started comparing their products with our current solution.

We attended three vendor webcasts offered by Turning Technologies (December 1-3, 2014) and met with a sales representative from i>Clicker via teleconference (March 23, 2015). We also established vendor contacts at both Turning Technologies and i>Clicker we can approach if future initiatives warrant.

**February-March 2015**

*Features & functionality matrix* - We organized the features and functionality as suggested by instructors, as well as those deemed important for a campus-wide deployment, into an evaluation matrix for comparing different vendors/solutions. Once we determined a campus-wide wireless infrastructure would be necessary in order to deploy any alternative solution, we completed a draft of the matrix framework/structure as a deliverable of the project (Appendix) to be used to evaluate future polling/assessment solutions.

**April 2015**

*Classroom observations* - Visited Professor Douglas VanderGriend’s chemistry course held in NH251 to observe how he uses the clickers. While Professor VanderGriend expressed a hope to potentially reduce student costs in the future (cost of the CPS Pulse and activation costs), he did report eInstruction currently provides the varied functionality he is looking for to meet his pedagogical objectives. (April 13, 2015)
Alternatives to keep an eye on

If Calvin College already had a robust, campus-wide, wireless infrastructure in place, the recommendations from this re-evaluation project could have turned out differently. For example, as of the spring of 2015, several products would have been strong contenders for potentially replacing eInstruction’s Classroom Performance System (CPS), including:

- Poll Everywhere: [www.polleverywhere.com](http://www.polleverywhere.com)
- Mentimeter: [https://www.mentimeter.com/](https://www.mentimeter.com/)

In addition to those three products, some other potential solutions presented themselves as having enough functionality to merit pulse-checking them over time, such as:

- Learning Catalytics: [https://learningcatalytics.com/](https://learningcatalytics.com/)
- Plickers:
  - [https://www.plickers.com/](https://www.plickers.com/)
  - [https://www.youtube.com/watch?v=JJgpVrA_cEo](https://www.youtube.com/watch?v=JJgpVrA_cEo)

Lastly, we considered -- but quickly rejected -- the following options:

- Google Forms + Flubaroo
- ProProfs (Quiz Maker)
- Learningpod
- Poll & match
- QuestionPro
- Survey Anyplace
- Poll daddy
- Hot Potatoes
- Quiz Revolution
- Quibblo
## Appendix A: Matrix for evaluation polling & assessment software

*Matrix outlining potential features & functionality for evaluation when exploring future polling solutions*

<table>
<thead>
<tr>
<th>1) Essential features / functions: Top tier features necessary before considering further features / functions</th>
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<tbody>
<tr>
<td>Fully web-based version (no client or RF required)</td>
</tr>
<tr>
<td>BYOD-based (wireless-enabled)</td>
</tr>
<tr>
<td>Provides an student app for wireless-enabled device</td>
</tr>
<tr>
<td>Student device offered</td>
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<tr>
<td>Radio-frequency receiver required</td>
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<tr>
<th>2) Very important features / functions: 2nd tier features to be considered after product meets all top tier features</th>
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<tbody>
<tr>
<td>Fully integrated course rosters with LMS to easily record grades</td>
</tr>
<tr>
<td>Moodlerooms Q&amp;A process complete</td>
</tr>
<tr>
<td>Integrated LMS rosters to import/export student data</td>
</tr>
<tr>
<td>Interchangeable between PC &amp; Mac</td>
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<tr>
<td>Integrates with PowerPoint</td>
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<tr>
<th>3) Important features / functions: 3rd tier features to be considered once product meets all top tier &amp; all (or most) 2nd tier features</th>
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<tbody>
<tr>
<td>Administer tests / quizzes in class</td>
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<tr>
<td>Anonymous participation</td>
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<tr>
<td>Allows for verbal (spontaneous) questions</td>
</tr>
<tr>
<td>Integrates non-graded questions into lectures</td>
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<tr>
<td>Supports multiple question types</td>
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<tr>
<td>Other:</td>
</tr>
</tbody>
</table>

### Conclusion