

2018 OSU Student Response System Needs Assessment Report

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1. **Overview**

Though Turning Technologies (TT) clicker system is currently the one officially supported by IS/Academic Technology, usage of Top Hat (TH) at Oregon State approaches it. The out-of-pocket cost of clickers for students is not insignificant, with a collective spend of over \$460K for the academic year. Furthermore, thousands of students have been required to purchase both systems because of course requirements. An immediate goal should be to help guide the community to a single solution, while at the same time maximizing savings for students.

Based on a combination of current trends in student purchases, surveys to students and faculty, faculty focus group results, and support tickets, Academic Technology recommends switching now to Top Hat – a mobile-only solution that does not require a dedicated response device, as the one centrally supported SRS, knowing that some use of Turning will continue though decline over time. Implementing Top Hat with some form of subsidized enterprise agreement would further decrease cost to students. With a full enterprise agreement, utilization of SRS would increase significantly, even doubling as seen at the Ohio State University.

a) Background

Turning Technologies (TT) has been OSU's centrally-supported student response system since 2011. Over the past seven years, interest in and use of "clickers" has continued to grow for a variety of teaching and learning scenarios. Through recent surveys and analysis of support tickets, Academic Technology has identified the following needs:

- Students
 - Intuitive to use
 - Ability to see grades/points
 - Ability to use personal mobile device or laptop
- Instructors
 - Ability to engage students and facilitate active learning
 - Ability to measure student participation, gauge understanding, and take attendance
 - Ability to associate polling questions with PowerPoint slides
 - Ability to poll students independently from PowerPoint slides

- Ability to import SRS results to LMS gradebook
- Effective balance between simplicity of use and features that support a variety of teaching and assessment needs
- Students and instructors
 - Low or (ideally) no cost to students: Students *and* instructors commented overwhelmingly on the high cost of clickers, with many secondary requests to avoid having multiple student response systems on campus.
 - Reliable service
 - Clickers should enhance, not detract from in-class learning

It is also important to note that while this evaluation report focuses on academic use of student response systems, there is considerable adoption of response systems for non-curricular use, e.g., Extension outreach, conferences, research, workshops, recruiting, surveying, faculty senate and similar events.

b) Time for needs assessment

Due to increasing cost of clickers for students and simpler yet applicable models that meet faculty needs, adoption of other tools that compete with the centrally supporting Turning Technologies is rising. OSU has been using the Turning Technologies clicker system for 7 years now, as an outcome of an evaluation that was conducted during 2010-2011. There is an increased interest in adopting response systems due to utility. As a result of divergence of use across the university and service demands, it is time to reassess the needs of faculty, students and support. Since 2014 around 321 instructors and 30,852 students have used the centrally supported Turning Technologies clicker system. This past year 56 faculty have requested clickers as a requisition item through the bookstore and 3,416 students have purchased clickers.

c) Change factors:

i) Multiple systems in use

Top Hat is the second most used alongside Turning with 8,510 students registered. Because of the mobile only option students can poll without having to rely on a physical device, which simplifies the registration process. Also, there are diverse question types that faculty prefer to use, in addition to the ability of creating interactive content on the web without relying on software. Learning Catalytics follows in use mostly in Physics, Math and Chemistry allowing students to interactively graph responses to questions using their smart device; then iClicker is used amongst 5 faculty for simplicity of interface, and lastly PollEverywhere is used amongst 10 faculty that are supported college-wide in College of Veterinary Medicine.

ii) Other vendors with maturing products

SRSs are continuing to evolve, along with new ways of engaging students in and out of class. Vendors are forward thinking, and establishing partnerships with consortia leverages tools to better meet instructional use and student learning.

iii) **Changing needs to collect and analyze data**

Having the ability for administrators to have access the specific data parameters to report on is paramount. It is important for students to have the ability to review their clicker responses in their accounts, so they can go over the questions and their answers as a study aid. It is advantageous for the product manager to have access to vendor data, having the ability to run analytics for general usage purposes, performance of system, and teaching guidance.

iv) **Unizin**

Top Hat offers a forward-thinking roadmap that aligns with the Unizin Data Platform, provides access to OSU's data, supports the IMS Global Caliper data standard, supports a variety of teaching and learning modalities, and has announced unique support for [OER](#) materials.

There would also be a major shift from a separate clicker device to utilizing the students' personal devices. The sizeable current use of Top Hat shows this is feasible.

A Top Hat enterprise agreement leverages OSU's Unizin membership, and provides students with the strongest combination of economic value and pedagogical support due to reduced cost, likely increased faculty adoption, and reduction of multiple SRS's on campus. Top Hat also offers significant training and transition services to faculty, as well as student clicker device buy-back (\$20 rebate), if we were to enter into an exclusive agreement in which Top Hat is the centrally-supported product.

d) **Current state**

i) **Top Hat and Turning Technologies**

A growing number of instructors have adopted Top Hat, and its' use has approached that of TT.

- 7,441 students purchased TH licenses in AY 2017-18; these are slightly higher than the unique number of students using TH, if students purchased more than one subscription during the period (2 semester subscriptions instead of a 1 year)
- Est. 5,000 students using both TH and TT this year (based on HHS 231 students who take courses in which TT is required)

AY 2017-18	Top Hat	Turning Technologies
Instructors using	43	66
Students using	7,096	11,000 (est.)
Licenses / devices purchased by students	7,441	3,416 (devices + licenses bundles); 630 standalone licenses

OSU Student spending on Top Hat and Turning AY 2017-18

Turning	Top Hat	Total
66 instructors using	42 instructors using	
\$276,770 (3,416 sales)	\$183,886 (7,441 sales)	\$460,656
device + license: \$257,885		
license only: \$18,885		

- For Turning, the usual student purchases this year was a \$75 bundle of device + 5 yr license
- For Top Hat licenses, students paid \$26 for a term, \$38 for a year, \$75 no expiration date.
- Thousands of students purchased both systems to meet course requirements

ii) **Turning – physical clicker**

Clickers are costly and could be misplaced or lost. Having physical clickers adds a layer of complexity, due the need of loaning programs. There are issues with students purchasing older clickers online that cost less, because they could be defective. In those cases, we have interfaced with students in order to determine why they are not able to participate. Students can also input their responses incorrectly and require assistance in how to actually use their clicker properly.

Having the Beaver Store be the distribution point for a physical clickers or digital classroom engagement elements are ideal for consistency in use of class materials.

iii) **Mobile-only option**

More students are requesting that faculty to enable the mobile response option so they can use their smart phones. From time to time students forget their clickers and don't want to miss out on participating during class. Also, they don't want to have to pay a lot of a physical clicker

when they already have a smart device that can be used more effectively, because the question choices and results are visible on their smart device for better review.

iv) **Common workflows**

1. Instructors create their content in PowerPoint or any other presentation tool and associate their questions in that platform as well.
2. For delivery purposes faculty poll for attendance/participation or ask questions on the fly using a separate program.
3. Synchronize the roster (participant list) with the course and grading is possible manually through the Canvas integration. Uploading grades is a manual option through the software.

i. **Simplicity vs features**

Having a solution where there are too many processes requires overhead in support and increased learning curve, which hinders faculty adoption. If the tool's workflow is multistep and too involved that introduces more room for errors. The ability to have polling data and content accessible in an online environment is ideal. Faculty prefer little learning curves, less steps, and more automation.

Turning Technologies software has too many bells and whistles that contributes toward making the polling process riddled with potential issues. For example, PowerPoint in and of itself is buggy, let alone running it on the Mac OS. Using PowerPoint polling on a Mac does not work consistently, and with software version updates and Office updates conflicting contributes towards certain features to not working properly.

ii. **Non-Academic Training and Support**

In addition to instructional use, clickers are increasingly being employed for non-curricular purposes: for creating engaging presentations, at conferences, Faculty senate, at START = Student orientation, BEST – summer courses for athletes, Extracurricular use - Extension, admissions/recruitment events, Greek life venues for voting, assessments, vendor research – Geometry of Learning, gamification, meetings, trainings, seminars, workshops, faculty forums/meetings, administering surveys for certification/research.

- 762 clickers and 18 receivers as total kits are circulating out of the Library for OSU community members to use in non-classroom settings.
- Since November 2014 roughly 268 clicker checkouts have occurred from the library.
- Out of the 72 faculty, 154 requests have been made since December 2015.

We provide faculty with instructions and training (involving question creation), and the hardware & software (receiver/response cards) are circulated through the library. We try to make ourselves available in person or remotely during events. Post session we assist in

analyzing the statistics from the clicker results, where we help in generating reports and extracting data.

Extracurricular support considerations

1. Active Engagement vs Research Data
2. Reports vs full data
3. WI-FI or hotspot for presenter vs none
4. Operating system / compatibility PC better for PPT
5. # of presenters

Faculty using clickers for research, i.e. the Pesticide Management Certification Program received a 1-year complimentary license for total # of attendees. A subscription is necessary as detailed data/results is tied to their respondents' individual participation. We have bulk subscriptions that we assign to faculty based on the number of seats they need per session. Other research uses have been the College of Education's English language learning survey and STEM Extension Communication.

New faculty require training 1.5 - 2 hours consisting of these steps:

1. Get clicker kit from library
2. Setup – orientation
3. Integrate with MS PPT
4. Question creation
5. Projection setup
6. Reports / results

600 hours in a month / 40% extracurricular support demand for = 240 hours

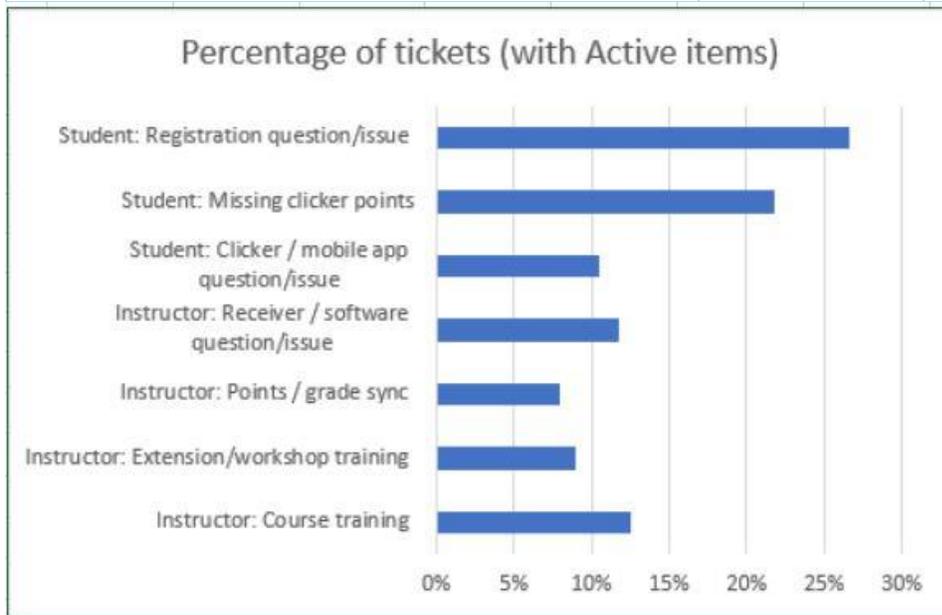
Communication	15-20 hours	
Consultation	30-35	5%
Training	60	10%
Troubleshooting	15	
Follow - up	15	
	150	10-15%

iii. **Known faculty & student issues**

Based on the trouble tickets we have received the following issues appeared:

- Assigning student's participations points
- Glitches during polling
- Missing clicker points due to registration issues

Support tickets since December 2017	391	
Instructor: Course training	49	13%
Instructor: Extension/workshop training	35	9%
Instructor: Points / grade sync	31	8%
Instructor: Receiver / software question/issue	46	12%
Student: Clicker / mobile app question/issue	41	10%
Student: Missing clicker points	85	22%
Student: Registration question/issue	104	27%



b. Survey methodology

On February 26th, 2018 the faculty Qualtrics survey link was sent out through the University's communications Inform listservs, which reached all Instructors, Research Associates, Research Assistants, Professors, Associate/Assistant Professors. In addition, we sent the survey out to faculty who have been subscribed to the existing Clickers listserve, which we use to communicate quarterly updates to. We shared the student survey with the Deans and Associate Deans of the colleges to disseminate. They shared it through their departmental listserves and posted it on their newsletters. The survey took approximately 3 minutes to complete and participation was voluntary. A reminder was sent 2 weeks after the initial invitation was sent via the same listserv on March 14th. The survey closed on April 9th at 1pm. Responses have been kept confidential and are reported only in aggregate. We requested faculty feedback even if they haven't used SRSs before, because the results of this assessment will inform future learning technology decisions for the entire university. Additional comments have not been reported in a manner that would not allow for identification of individuals. Out of 5,000 faculty, 301 responded. Out of 25,000 students, 484 responded.

i. Faculty survey

- 78% of responding faculty don't use an SRS, but of those who don't over 50% would be interested in using one.
- Of the 64 faculty respondents who have used an SRS, roughly 70% have used TT; only 5% of respondents reported having used TH. Faculty users of clickers overwhelmingly agree that they are beneficial for students' learning and increase student engagement in courses.
- All faculty respondents were asked to rate factors as very important for choosing an SRS; results include:
 - 88% chose reliability
 - 69% chose cost to students
- Of the 285 faculty, 22% still have a policy on prohibiting electronics in the classroom.
- When asked about what else faculty would like to share, the most repeated themes were that:
 - Turning Point is clunky, too complex, not reliable, losing time in lecture to get setup
 - Need pedagogical support/training - application of using them effectively in class

See Appendix B for detailed results and open-ended response themes.

ii. Student survey

- Of the student responding, 85% have used one or more student response systems at Oregon State. Of those, 92% have used TT, 27% Top Hat, 26% Learning Catalytics, 12% Poll Everyone, 6% unsure of the brand.
- Overall, nearly 90% of students who have used clickers found clickers easy to use and nearly 60% felt clickers are useful for their learning.
- Of students who have used TT, 77% of students are dissatisfied or very dissatisfied with the cost. This is their biggest complaint while being reasonably satisfied with the registration process, the ability to see points, and with the reliability of the TT device. Students are evenly split on their opinion of the TT mobile app.
- Of the 87 students who reported using both Top Hat and Turning, 60% ranked Top Hat higher than Turning.
- 88% of students use clickers in more than 2 courses.
- When asked what about clickers was most helpful to student's learning the most repeated themes were that:
 - Being able to see real time feedback, as to if they are understanding the material and seeing results for how class polled, as a quick assessment
 - Nothing – clickers are a waste of money/time and do not contribute to learning whatsoever

- When asked what about clickers was least helpful to student's learning the most repeated themes were that:
 - It is difficult to use, clunky, the battery dies, signal connection failure occurs then they lose points
 - It distracts them from focusing, taking notes, they might miss points if they have to juggle between tasks, they don't have enough time to answer question, which is very stressful when they feel rushed to answer clicker questions.
- When asked if there is anything else that students would like to share about their use of clickers, the most repeated themes were that:
 - The cost is high
 - It does not enhance learning

See Appendix C for detailed results and open-ended response themes.

c. Faculty Focus Groups

We conducted 3 focus groups, one during finals week of winter term and two during week 2 of Spring term. A total of 50 faculty were interested, but only 21 faculty participated. The focus sessions were an hour and a half and recorded. Below are themes drawn from the questions asked, that were based on the most resounding feedback from the open-ended survey results.

- i. What do instructors want out of SRS, grades, including accessing, viewing grades?
 - Engagement/participation - increase motivation and class attendance
 - Testing/assessment
 - Real-time feedback on what students are having difficulty ascertaining
 - Gaming, having diverse question types to elicit understanding
 - For peer discussion, informal opinion polls
 - Low cost to students, use cell phone (doesn't have to be smart phone)
 - Functionality, reliability, accessibility
 - Integrated with Canvas - automatically graded
 - Consistent use of one clicker in order to decrease cost for students, enterprise wide standard
 - Streamlined process - not to have many major changes in the system in order to have to relearn workflow annually
- ii. When you prefer a simpler solution, do you not want to download software or have no PPT integration (untethered presentation)
 - Yes, simpler solution preferred, don't want to deal with registration or grading issues

- Question on the fly in class and be able to integrate into Canvas and be incorporated in instruction seamlessly
- Cross-platform compatibility
- Strong Wi-Fi reliability/stability
- TT is too complicated and has a cumbersome interface, upgrading Turning would break PowerPoint working at times
- Other systems are stable, and students are self-sufficient with participating and don't need to turn in papers for attendance when system fails or if they forget their device
- Mobile option preferred because over 98% students have a smart device
- Integrate into PowerPoint (not separate device)
- Don't like how can't modify PPT slides within TH, have to reupload
- Like the simplicity of not using the specific receiver, and taking multiple steps
- PowerPoint is buggy, instructor has to adjust content 5 minutes before class, it would be a hassle if instructor could not do that conveniently. Events / facts change, need to be able to adjust lecture on the fly

iii. What help/resources do you want/need?

- Leave TT, rely on our support and won't try independently unless we adopt TH and centrally support a system. It is imperative to have local reliable support on hand.
- Having pedagogical resources is necessary and has been lacking. Pedagogical mechanisms, data collection, how they actually help students learn.
- Support faculty during their meetings to do trainings, come to lecture and evaluate how to incorporate clickers best in instruction, because faculty are stretched on time.

iv. What is your gut reaction if we switch systems for Fall, assuming there are clear benefits, based on evaluation results?

- No concerns and confident in our decision
- No worries because it's enough time given the support we locally provide
- Would like to be on evaluation committee to see other SRSs in action and see other platforms
- Want what is seamless and best and what OSU adopts.
- Overwhelmed with major switch to another vendor, which translates to new workflow all together, must redo everything.
- Excited to switch!

- v. Is there anything else you would like to share that we haven't covered?
- Concerned for spotty Wi-Fi signal, cell signal
 - Will there be a policy mandating use?
 - Essential to have untethered work.
 - Needs and uses of non-curricular is a big gap compared to academic use.
 - How does it work online for asynchronous polling?
 - Gathering data to turn into information to make decisions
 - Carl Wieman on evidence-based classroom practices & active learning

d. **Technical evaluation**

Faculty share the following:

- Turning Point has buggy software and it's too complicated
- We need discipline specific pedagogical support – effective active learning

Student shared the following:

- Clickers seems to be only used for attendance and not enhancing learning
- Not used effectively in and across classes
- TT clicker is difficult to use

We have a separate document where we are going over various testing of functionality and capability of system based on demand.

See Appendix A for factors in consideration

e. **Total cost of TT service / technical support**

Although Turning Technology provides technical support, Academic Technology's clicker team has provided tier 1 support to OSU students and instructors since adopting the system to ensure timely and effective issue resolution.

The clicker team provides the following support on Turning Technologies:

- Instructor support - training new instructors, and troubleshooting issues
- Assisting students registering their Turning accounts and devices at the beginning of each academic term
- Resolving student registration issues
- Answering student questions about Turning devices

FTE	Time breakdown	Tasks
Supervisor	40 hours a week	Product manager, support <ul style="list-style-type: none"> • What grads assist with • Send out quarterly communication emails to faculty updating them on our services or changes made to the program • Maintaining information on our website with instructional manuals, links to vendor hosted webinars, best practices guides for clicker use and other relevant resources
2 graduate students	20 hours	Tier 1-3, testing, training <ul style="list-style-type: none"> • What undergrads assist with • Replace malfunctioned clickers, and mediate communication between them, instructors and Turning Technologies. • Investigate why students may have lost their clickers' points, and handle email inquiries relating to clicker issues • Assist faculty in recovering lost data session(s) in cases of software failure or they forget to save the session after they close the program upon class ending. Help faculty with uploading grades to Canvas or exporting to Excel.
1-2 undergraduates	10 hours	Tier 1 Support <ul style="list-style-type: none"> • Answer tickets • Help students with clicker issues • Registration Support table

i. **Hardware**

The clickers are complex given all the buttons and options available. This presents a barrier to getting students to understand how to use the device initially. We provide instructor with clicker kits from Turning Technologies that contain a sample student clicker, receiver, and a remote presented card. At times student clickers become defective and the USB receivers need to be replaced, if a professor loses theirs or becomes faulty.

ii. **Pricing** (assuming only a single, centrally supported solution)

Top Hat (Unizin pricing)	Turning Technologies
<p><u>Full Enterprise</u></p> <p>(based on 25,000 FTE)</p> <p>3-Year Contract, Unizin Price - \$163,537.5/year - 5% discount \$155,360.63 *</p> <p>5-Year Contract, Unizin Price - \$153,258/year - 5% discount \$145,595.10 (*before June 30th)</p>	<p><u>Enterprise</u></p> <p>(based on FTE of 25,327 undergraduates)</p> <p>3-Year Contract - \$137,779/year</p> <p>5-Year Contract - \$125,369/year</p> <p>ResponseCard QT2s bookstore cost = \$24.43 (est. student cost @ 16% markup = \$28)</p>
<p><u>Hybrid Enterprise option A</u></p> <p>If OSU contributes \$50,000 per year for 3 years, students pay:</p> <p>1 term – \$13.89</p> <p>1 year – \$20.83</p> <p>Lifetime – \$38.18</p>	
<p><u>Hybrid Enterprise option B</u></p> <p>If OSU contributes \$24,999 per year for 3 years, students pay:</p> <p>1 term – \$16.94</p> <p>1 year – \$25.41</p> <p>Lifetime – \$46.59</p>	
<p><u>Standard Unizin student paid licenses</u></p> <p>\$20/semester, \$30/year, \$55/lifetime</p>	<p><u>Standard student paid licenses (as of 2017-18)</u></p> <p>\$75 – device and 5-year license bundle</p> <p>License only:</p> <p>\$10/1 year</p> <p>\$15/2 years</p> <p>\$30/5 years</p>

***Potential Savings for students with TT student pay model**

TH Full Enterprise	TH Hybrid Option A (50K)	TH Hybrid Option B (25K)	Standard student paid (Unizin rate) (\$75-55 * 6,000)
\$255,000	\$282,000	\$228,000	\$120,000

*Based on est. 6,000 incoming first-year and transfer student purchasing TH @ \$75/bundle (\$75 – option price * 6,000)

Avg. first-year freshman enrollment fall term: 11,500; undergrad transfers fall term enrollment: 2,250

Potential savings for incoming AY 2018-19 students with TH Standard Unizin student paid license: \$68,000

License option	Student savings
TH Full Enterprise	\$450,000
TH Hybrid Option A	\$282,000
TH Hybrid Option B	\$228,000
TH Standard Unizin student paid license	\$120,000

2. Recommendation

Academic Technology recommends implementing Top Hat with enterprise agreement. Top Hat offers a forward-thinking roadmap, access to our own data, and support for a variety of teaching and learning modalities.

The enterprise agreement leverages OSU’s Unizin membership and provides students with the strongest economic and pedagogical support due to reduced cost, increased faculty adoption, and reduction of multiple SRS’s on campus. Top Hat also offers significant training and transition services to faculty if we enter into a hybrid or enterprise agreement.

Academic Technology proposes the following options:

Option 1: Implement Top Hat with an enterprise agreement in time for fall 2018.

Option 2: Implement Top Hat with hybrid model in time for fall 2018.

Option 3: Implement Top Hat with a student pay model in time for fall 2018, then consider a full enterprise agreement the following year.

a. Impact of Top Hat / Unizin agreement

- With a full student pay model, student pricing would be \$20/semester, \$30/year, \$55/no expiration date.
- When moved to a single platform, the difference between \$75 and \$55 is over 25% reduction in cost for students
- Additional savings for students is possible by OSU subsidizing the student price:
 - For \$25K, students would pay \$16.94/term, \$25.41/year, \$46.59
 - For \$50K, students would pay \$13.89/term, \$20.83/year, \$38.18
 - For \$146K, students would pay \$0. Students would go from collectively spending \$460,000 to \$0 in an academic year; and faculty could add use of an SRS to increase engagement with no financial impact on the students.
- Reducing the impact of change on students:
 - A \$20 rebate for the old device (a common vendor practice)
 - Encourage faculty who continue to use Turning to use the version that doesn't require a device, but only a license (which is significantly cheaper).

In short, Top Hat purchases have already exceeded purchases of Turning bundles; that is likely to increase. Switching to Top Hat now as the centrally supported SRS aligns with strategic goals of reducing costs for students and increasing opportunities for student engagement in the classroom. At the same time, it leverages our involvement in the Unizin consortium, which has negotiated special pricing.

Moving to the Top Hat student pay model or subsidizing by \$25K would likely not require an RFP process. Moving, optimally, to the full enterprise subsidized model or \$50K subsidy would likely require an RFP process.

b. Timing considerations

Transitioning to a new student response system introduces a very significant workload for faculty, akin to adopting a different textbook, and/or redesigning a course. If OSU transitions to a new student response system, it must be done in time for fall term so that incoming students avoid purchasing devices that will be obsolete within the school year.

Participants in the faculty focus groups indicated they would be amenable to switching to TH in time for fall 2018 if OSU entered an enterprise agreement and if TH is a centrally-supported system.

c. Forward looking roadmap

Transitioning to a new student response system introduces a very significant workload for faculty, akin to adopting a different textbook, and/or redesigning a course. If OSU transitions to a new student response system, it must be done in time for fall term so that incoming students avoid purchasing devices that will be obsolete within the school year.

Participants in the faculty focus groups indicated they would be amenable to switching to TH in time for fall 2018 if OSU entered an enterprise agreement and if TH is a centrally-supported system.

d. **Contain student cost**

In line with Unizin’s aim of promoting affordable and accessible digital content for higher education students, the partnership grants educators at member institutions access to Top Hat’s full range of tools. Supporting a single student response solution either via a site license will contain cost as real savings can be realized through reducing the cost to students on course materials, particularly textbooks. A typical estimate of the cost of course materials per year for students is \$1,200. Based on our current student FTE, the current student spend on these materials is over \$30 million per year.

Members of the consortium will also have the ability to create and collaborate on digital, interactive content for their courses that is both cost effective for students and completely customizable—ensuring higher rates of learner success. They are also providing benefits from up to 70% cost savings on eTexts and up to 50% cost savings on digital courseware. We are advocating for the enterprise license model for SRS. Because faculty concur that TH is expensive and that’s one of the reasons why they don’t adopt that tool. Totaling to about **\$460K** on the combined student response system spend.

A growing number of instructors have adopted Top Hat (TH) – a mobile-only solution that does not require a dedicated response device. Top Hat is the most-used SRS on campus, in addition to Turning Technologies.

Student spending on Top Hat and Turning Academic Year 2017-18

Turning	Top Hat
\$276,770	\$532,717
clicker + license: \$257,885	license: \$183,886
license only: \$18,885	instructor-authored content: \$348,831

- 56 instructors and approx. 5,000 students used Turning Technologies in AY 2017-18
- Est. 3,416 students have purchased Turning devices and/or licenses in AY 2017-18
- Approx. 5,800 students have purchased both TH and TT this year
- In the last 12 months there are 53 active instructors and 8,332 students using TH

i. **Purchasing multiple devices**

When a tool is supported at an enterprise level then faculty are more inclined to use it, because services surround the implementation along with best practices and wider adoption and

effective use. Then students don't have to struggle to learn to use a new device and the task of registering it. This way they can focus on succeeding in class with consistency in use of tools across the years of them being enrolled.

ii. **Access to data**

Faculty can use the software to run rich reports on individual student participation and performance per class session or overall. Work with Turning Technologies on drilling deeper to provide analytics on their end via specific parameters and triangulate usage in relation to participation/performance activity for students and pedagogical use for instructors has not progressed. It is permeable based on its interdisciplinary use. The growth for low stakes assessments, especially self-paced polling could potentially replace the use of Scantrons. The peer-engagement factor, taking attendance in class quickly and conveniently, keeping students focused, as well as increasing their performance through reusing some of the in-class clicker questions on the midterm and final exam assist in maximizing student success. If the clicker questions are created in a pedagogically effective way, then students can gain better grades as a result of content retention. Top Hat will be integrating with the Unizin Data Platform (UDP) to enable all members to benefit from the data being collected by member organizations.

iii. **Student learning and engagement**

The immediacy of feedback and ways to facilitate discussion and re-poll are tremendous. Acquiring demographic information and getting a pulse of the class can be presented in a profound way visually to students. The most utilized diverse question types are demographic, alphanumeric, opinion/survey, factual and visualization.

iv. **Enterprise license**

In order to have large scale adoption clickers needs to be supported at an enterprise level and not just centrally. This way students are not paying for them directly and competing vendors will be less likely to sway faculty. If we adopt Top Hat as a standard, the number of student users will increase dramatically. Current Top Hat users could save their students \$27,000 by opting into Unizin pricing.

Top Hat pricing

1. Unizin enterprise, based on 30,000 enrolled FTE, assuming TH is the only centrally supported SRS at OSU:
 - 3-Year Contract*, Unizin Price - \$163,537.5/year
 - 5-Year Contract*, Unizin Price - \$153,258/year
2. Standard Unizin *student paid* licenses are \$20/semester, \$30/year, \$55/lifetime
3. Hybrid – proposed:

If OSU contributes \$50,000 per year for 3 years, students pay:

1 term – \$13.89 per student

1 year – \$20.83 per student

Lifetime – \$38.18 per student

Turning Technologies pricing

3-Year Contract - \$137,779/year for complimentary license - \$24.43 for clickers for those instructors that require it (may be marked up at bookstore – need to negotiate)

5-Year Contract - \$125,369/year for complimentary license - \$24.43 for clickers for those instructors that require it (may be marked up at bookstore – need to negotiate)

v. **Compatibility with OERS (or other key strategic initiatives)**

There is also an OER angle based on Top Hat's marketing and the OpenStax partnership. Top Hat has opened up their platform in order to allow for collaborators to enhance their applications. Top Hat has also agreed to provide Unizin with all of their OER* content from their platform so that it is available through Unizin as well.

**See section iv on Unizin*

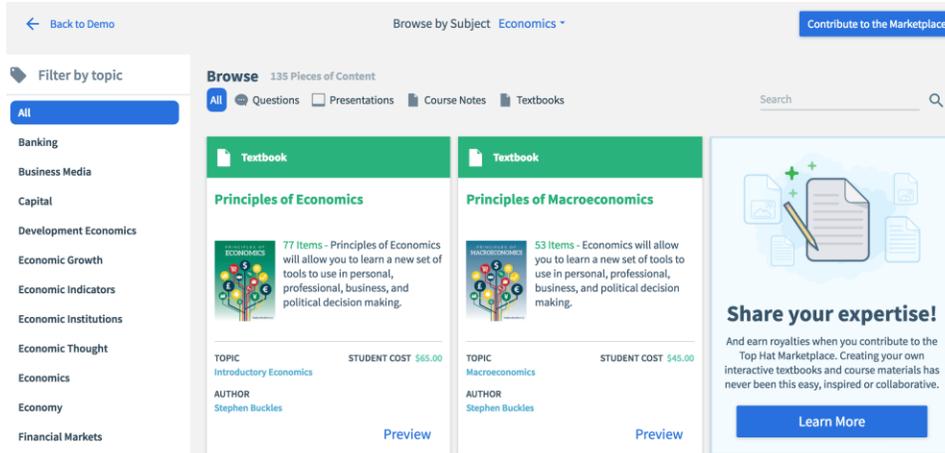
vi. **Address concerns**

1. **Mobile devices**

Out of the faculty that responded to the survey, 62 still don't allow for any smart devices. We will have to employ a strategy to introduce material on how to best avoid digital distractions in class. Therefore, faculty will feel more inclined to incorporating smart devices in their classroom in a pedagogical effective manner.

2. **TH content model**

The Top Hat Marketplace provides instructors with a repository where they can locate and create educational content that is interactive, easily customizable and much more affordable for students than conventional textbooks. Students pay fees between \$0 and roughly \$65 for the materials. What is unique is that there are two primary sources for the content - self-publishing by instructors and open education resources (OER) from OpenStax. The Marketplace has been designed as a self-publishing platform for educators designed around collaboration tools called [Textbook](#).



One big driver for self-publishing was the interest in keeping the textbook current in a changing topic. The Marketplace provides a convenient platform enabling active learning techniques and the ability to control and update faculty textbooks over time. Faculty can add interactive elements within their text. Content from the marketplace is usually free, unless instructor author's book then they can choose what to charge students. Based on open source model the TH text options are usually cheaper than those from mainstream publishers, they are \$10, \$15, or \$30 usually. 90% of the material on the TH Marketplace is free.

3. **Wi-Fi access**

We have information from Network Operations on general purpose classrooms outlining wireless coverage, the status of whether certain rooms meet coverage, a count of access points in each room and notes about the room. There are rooms highlighted that are going to be upgraded this summer. There are several Wi-Fi standards listed, 802.11n, 802.11nac or nacW2, and 802.11nac wave 2 is the latest Wi-Fi standard with the newest access points. The real difference between the standards are the number of clients that can connect to each access point and the transfer rates that the clients can connect at, therefore this information is useful for us in determining which rooms are ideal for faculty whom will be relying on heavy Wi-Fi saturation.

We might have problems with rooms located in Withycombe where animal science instructors usually teach especially in room 109, which is the big classroom on the ground floor. Another concern is in Weniger where physics instructors usually teach, we might face problems with room 153 where only 90 users are supported, but the room fits up to 128 and a lesser extent 151. And lastly Cordley, we are not sure if instructors using clickers teach on the 2nd or 3rd floor. We should be in good shape Wi-Fi infrastructure wise this summer, but come fall if these rooms don't get upgraded most likely they will be a concern.

1. **Sources & Acknowledgements**

- a. Learning Platform Services
- b. Clicker Team
- c. Unizin

- d. Top Hat
- e. Turning Technologies

4. **Appendix A – Factors in Consideration**

Description	Turning	Top Hat
Enterprise license	Negotiable; details TBD	Unizin contract provides significant incentive for enterprise license; pricing is based on enrolled student FTE; Enterprise license greatly reduces the proliferation of other response systems on campus; Drives adoption of SRS – faculty are willing to use SRS if there is no cost to students
Wi-Fi availability	TT receiver eliminates dependency on wireless/cellular availability	Required for TH use; offline mode is an option; Larger classrooms now on new core network; Troubleshooting in smaller classrooms may be needed
Non-curricular use of clickers	TT support well-established	TH solution will require testing, and, if adopted, transition support
Pedagogical support for handling distraction of mobile devices	Requires instructor to be creative and repurpose limited question types. Hot spot question type might be in development 2019	Will be needed if TH is adopted; Some instructors do not currently allow mobile devices or laptops in their classrooms
Vendor relations/reliability	Frequent turnover of TT staff; Not clear that the higher education market is a top priority	TBD, but other Unizin school indicate reasonable satisfaction with Turning as a partner
Access to response data	Can provide data; details TBD. TT can also provide access to Tableau were OSU to create its own reports	Optimized to Caliper standard; Will be available via Unizin Data Platform

Student access to personal devices/smart phones	N/A. TT supports mobile devices, but instructors may require students to use clicker device	Instructors at OSU and partner Unizin institutions report students access to personal devices is not an issue.
Support of low-cost / OER instructional materials	Not supported	Strategy defined; platform supports both OER and instructor-authored materials, including access to Unizin's OER's
Product roadmap	TT roadmap references new functionality that would benefit higher ed customers, some of which will might be in development 2019	Well-defined product roadmap with several services already available to meet higher education teaching and learning priorities

5. **Appendix B – Faculty Survey**

301 faculty responses

Q1: Are you using an SRS at OSU?

Out of the 285 faculty that responded, 78% of don't use SRS.

Q2: Would you be interested in using one?

Out of the 217 faculty that responded, 53% would be interested in using SRS.

Q3: Which system do you currently use?

Out of the 64 faculty that use SRSs, 71% of them use TurningPoint, 5% Top Hat, 6% Poll Everywhere, 5% iClicker,

Q4: How often do you use an SRS?

Out of the 64 faculty that use SRSs, 69% use it for two or more terms per academic year.

Q5: Rate your experience with Turning

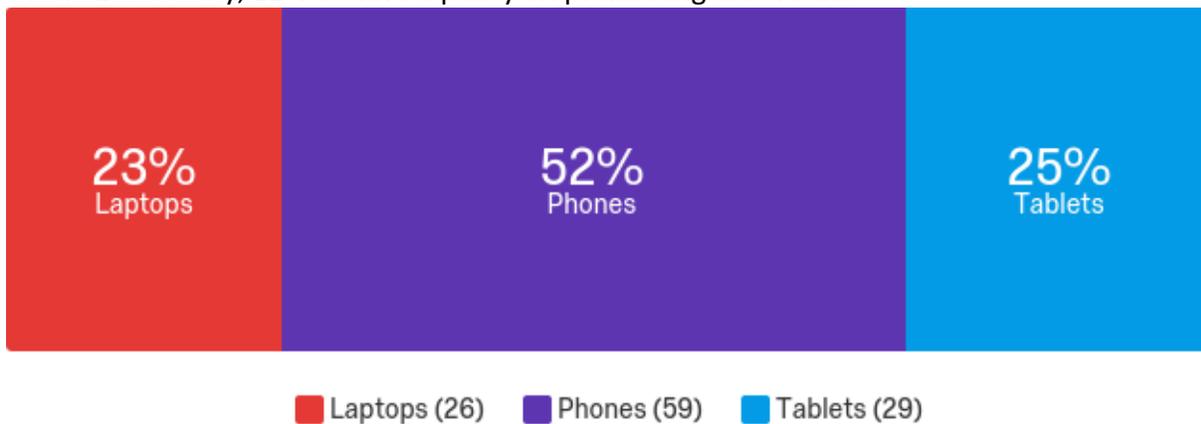
#	Question	Strongly agree		Agree		Disagree		Strongly disagree		Total
1	Turning was beneficial for my students' overall learning	36.36%	16	59.09%	26	2.27%	1	2.27%	1	44

2	Turning increased student engagement in my course(s)	63.64%	28	31.82%	14	2.27%	1	2.27%	1	44
3	Turning enabled me to do what I wanted to do	25.00%	11	59.09%	26	13.64%	6	2.27%	1	44
4	Turning increased my efficiency and effectiveness	22.73%	10	47.73%	21	20.45%	9	9.09%	4	44
5	Turning allowed me to teach in a new way	27.27%	12	47.73%	21	22.73%	10	2.27%	1	44
6	Turning increased the sense of community in my course(s)	18.18%	8	45.45%	20	29.55%	13	6.82%	3	44

95% of Faculty agree that Turning was beneficial for students overall learning
 95% of Faculty agree that Turning increased student engagement in courses
 84% of Faculty agreed that Turning enabled to do what they wanted to do
 70% of Faculty agreed that Turning increased their efficiency and effectiveness
 75% of Faculty agreed that Turning allowed them to teach in a new way
 63% of Faculty agreed that Turning increased the sense of community in their courses

Q6: Do you have a policy in your class prohibiting students from using any of the following?

Of the 285 faculty, 22% of have a policy on prohibiting electronics



Q7 – If you could choose an SRS/clicker system, how would you rate these factors?

In choosing an SRS - 69% cost to students is very important
 88% say reliability very important
 43% say ease of synching with Canvas is very important
 A combined 48% say it is important, and 32% say attendance is not important
 29% say administering quizzes / assessments is very important
 70% say it is important for fostering engagement.



Q9: What else would you like us to know about student response systems?

Open ended question placed in categorical themes and number of times commented on.

Turning Point clunky, too complex, not reliable, losing time in lecture to get setup	28
Need pedagogical support/training – application of using them effectively in class	22
Turning Point too expensive	18
Prefer mobile app option	16
Non-curricular purposes, extension, workshops, research, outreach & engagement	10
OSU should provide lower cost solution or rental option	9
Students having trouble registering their device / technical issues	7
Concerned about Wi-Fi	3

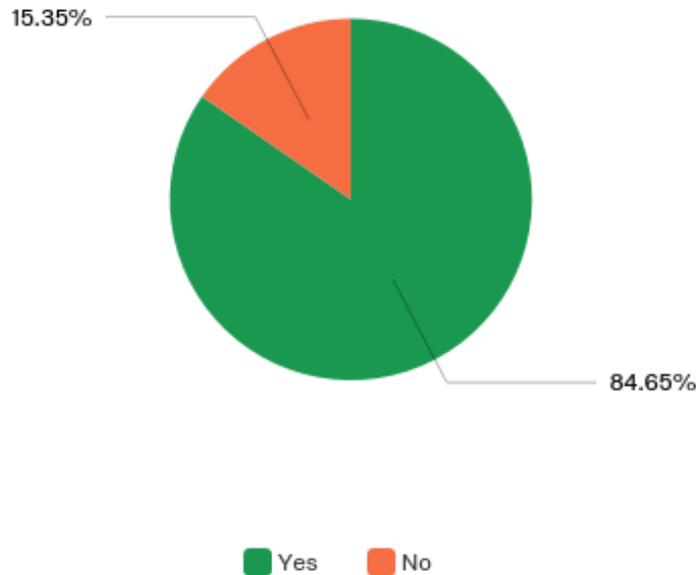
6. Appendix C – Student Survey

484 student responses

Q1: Which of the following devices do you use regularly in class?

68% regularly use Smart phones, and 56% use laptops, 14% use tablets, and .01% use flip phone

Q2: Have you used an SRS at OSU? 85% use SRS



Q3: How many different types of SRS have you used at OSU?

92% use Turning Technologies, 27% Top Hat, 26% Learning Catalytics, 12% Poll Everywhere, 6% don't know what brand they are using.

Q4: Rate your satisfaction with Turning Technologies.

#	Question	Very satisfied		Satisfied		Dissatisfied		Very dissatisfied		Total
1	Cost	3.52%	12	19.94%	68	41.64%	142	34.90%	119	341
2	Registration process	11.21%	38	61.06%	207	19.47%	66	8.26%	28	339
3	Ability to see points	11.24%	38	52.96%	179	26.92%	91	8.88%	30	338
4	Ability to use mobile device/app	11.80%	38	43.17%	139	29.81%	96	15.22%	49	322
5	Reliability of Turning clicker	26.55%	90	53.98%	183	12.68%	43	6.78%	23	339

42% students are dissatisfied with the cost of TT, but 55% are satisfied with reliability. 77% of students not satisfied with the cost of Turning clickers.

23% of students are satisfied or very satisfied with the cost.

72% of students are satisfied or very satisfied with the registration process.

64% of students are satisfied or very satisfied with their ability to see points.
55% of students are satisfied or very satisfied with the mobile app.
81% of students are satisfied or very satisfied with the reliability of their clicker.

When asked to rate their preferences, we considered the 87 student respondents that had experience with both TH and TT systems. Top Hat was rated the highest out of Turning and Top Hat users. Of the 87 students who have reported using both Top Hat and Turning in their classes, 60% ranked Top Hat higher than Turning, while the other 40% ranked Turning Technologies higher than Top Hat as their preferred clicker system. A count of 52 students prefer Top Hat and 35 prefer Turning. 21% of students are already using Top Hat in their courses.

Student Satisfaction with the Cost of Turning Technologies Clickers



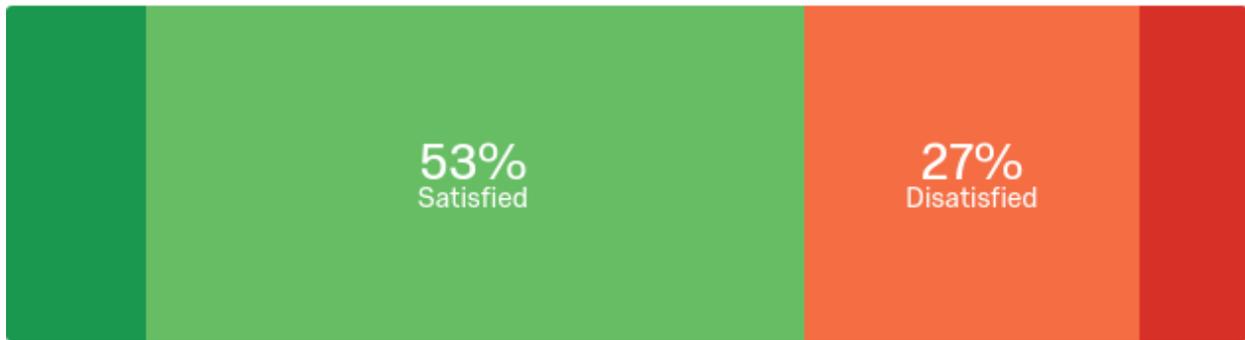
Very satisfied (12) Satisfied (68) Disatisfied (142) Very disatisfied (119)

Student Satisfaction with the Registration Process of Turning Technologies



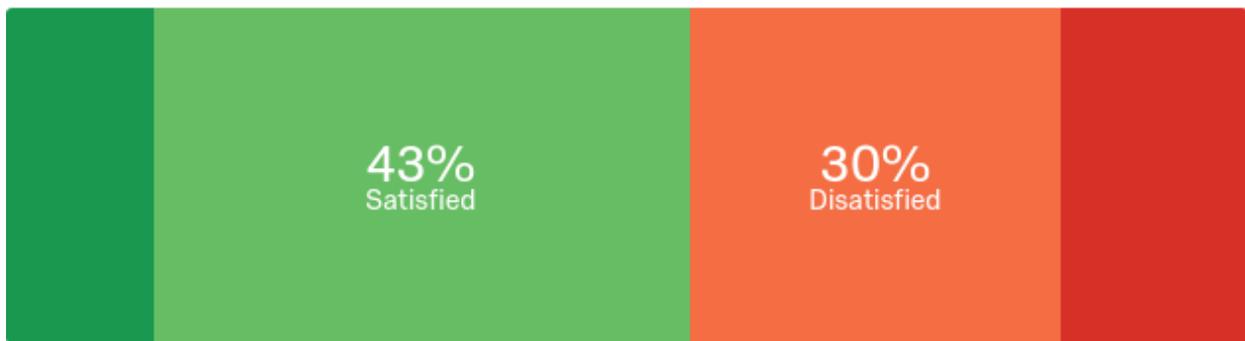
Very satisfied (38) Satisfied (207) Disatisfied (66) Very disatisfied (28)

Student Satisfaction with Viewing Grades from using Turning Technologies Clickers



Very satisfied (38) Satisfied (179) Disatisfied (91) Very disatisfied (30)

Student Satisfaction with the Turning Technologies Mobile App



Very satisfied (38) Satisfied (139) Disatisfied (96) Very disatisfied (49)

Student Satisfaction with the Reliability of Turning Technologies Clickers



Very satisfied (90) Satisfied (183) Disatisfied (43) Very disatisfied (23)

Q5: *Rate your preference for the clicker systems you have used.*

There are 87 responses where students had experience with both systems. Top Hat was rated the highest out of Turning and Top Hat users. Of the 87 students who have reported using both Top Hat and Turning in their classes, 60% ranked Top Hat higher than Turning, while the other 40% ranked Turning Technologies higher than Top Hat as their preferred clicker system.

A count of 52 students prefer Top Hat and 35 prefer Turning. 21% of students are already using Top Hat in their courses.

Q6: In how many classes have you used clickers in while at OSU?

71% of students have used an SRS in at least 2 classes.
 To summarize 88% of students use clickers in more than 2 courses.

Q7: Rate your agreement with the following about Turning clickers

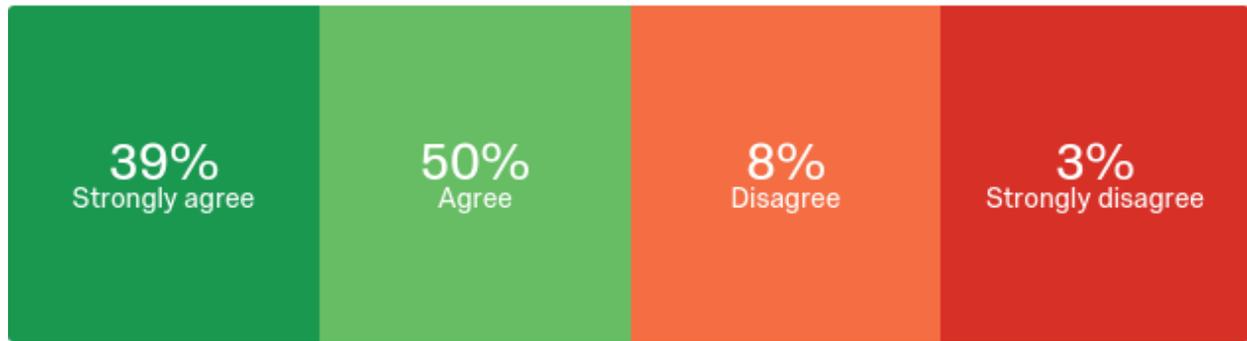
50% Agree TT was easy to use, 43% agree it was useful for their learning, 38% enjoyed using it TT, 30% would recommend it for other courses

#	Question	Strongly agree		Agree		Disagree		Strongly disagree		Total
1	It was easy to use	39.07%	134	50.15%	172	7.87%	27	2.92%	10	343
2	It was useful for my learning	16.67%	57	42.40%	145	24.56%	84	16.37%	56	342
3	I enjoyed using it	11.95%	41	37.61%	129	30.03%	103	20.41%	70	343
4	I would recommend it for other courses	13.45%	46	29.24%	100	32.16%	110	25.15%	86	342

In summary:

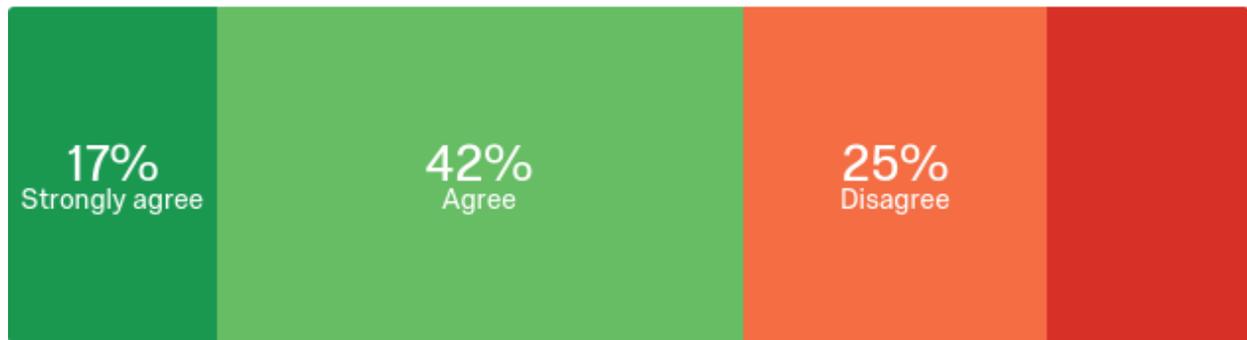
- 89% of students feel that clickers are easy to use.
- 59% of students feel that clickers are useful for their learning.
- 50% of students enjoy using clickers.
- 43% of students would recommend clickers for their other courses.

Student Agreement with "It was easy to use"



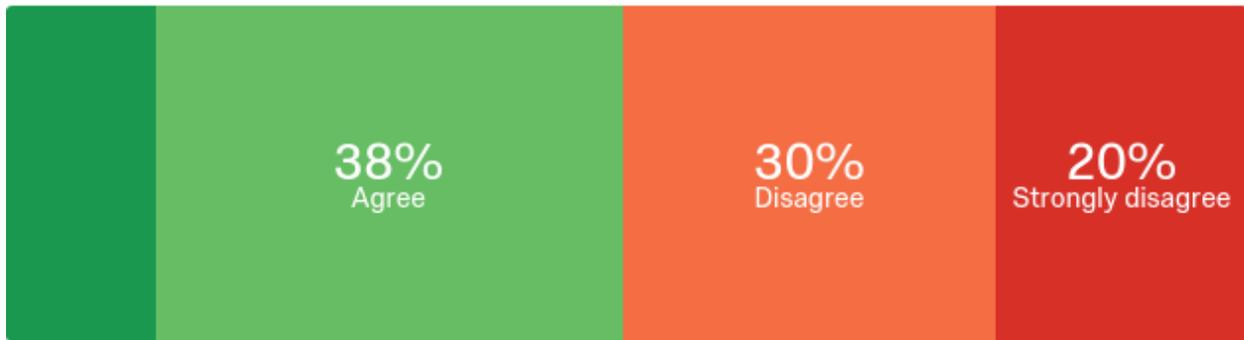
■ Strongly agree (134) ■ Agree (172) ■ Disagree (27) ■ Strongly disagree (10)

Student Agreement with "It was useful for my learning"



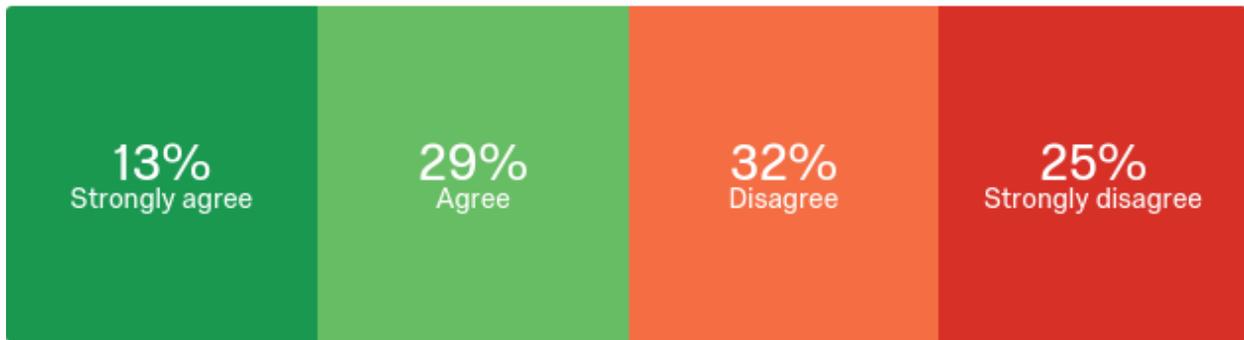
■ Strongly agree (57) ■ Agree (145) ■ Disagree (84) ■ Strongly disagree (56)

Student Agreement with "I enjoyed using it"



Strongly agree (41) Agree (129) Disagree (103) Strongly disagree (70)

Student Agreement with "I would recommend it for other courses"



Strongly agree (46) Agree (100) Disagree (110) Strongly disagree (86)

Q9: What about clickers is most helpful to you learning?

Open ended question placed in categorical themes and number of times commented on.

Being able to see real time feedback, if I am understanding the material and seeing results for how class polled, quick assessment	64
Nothing - a waste of money/time and do not contribute to learning whatsoever	51
It engages us to participate in the clicker questions and helps in paying attention	39
It enables class discussions and helps the professor know what we do not understand	35
It is a cool and helpful system if done right	31
Provided extra incentive to attend class	27
Getting participation credit, seeing different types of questions that could be on exams	25
Being able to engage in classes that are large	14

Q10: What about clickers is least helpful to your learning?

Open ended question placed in categorical themes and number of times commented on.

Difficult to use, clunky, battery dies, signal connection failure then loose points	43
Distracting from focusing, taking notes, might miss points if I have to juggle in between, not enough time to answer question, which is stressful when rushed	40
Easy to forget to bring clicker to class	20
Professor has a lot of technical difficulties, which delays the class	18
A difficult registration process	9

Q11: Is there anything else you would like us to know about clickers?

Open ended question placed in categorical themes and number of times commented on.

The cost is high	74
Does not enhance learning	36
Clickers are not used effectively and across most courses	31
Use phones instead of purchasing expensive clicker	27
OSU should provide them either for free or reduced cost	19
Multiple types of response systems mean students have to buy multiple types	9
Cheating and academic dishonesty – give friend's clicker if going to miss class	4