I. Action Plan Introduction and Authorizations

Executive Summary (maximum of 175 words)

Currently, NDSU is piloting two clicker vendors with the help of participating faculty and students, and will adopt one of those two vendors as the standardized clicker solution for campus by spring semester, 2012. Our previous clicker vendor’s products (the “Pulse” and the “Silver Bullet”) have become unusable due to faulty hardware and unreliable software. The pressing problem is that there are over 3000 “Pulse” clickers currently owned by NDSU students, and they were all purchased since summer semester, 2010. The “Pulse” clicker sells for around $50, and the students normally would receive $25 back for the clicker through the Bookstore buy-back system. But since NDSU will no longer be using the “Pulse” clickers after this semester, the Bookstore cannot purchase them back, just like they cannot purchase text books that have been discontinued.

The Bookstore would normally also give a $25 rebate for the older “Silver Bullet” clickers that are still in circulation. The last time students were able to sell back “Silver Bullets” to the Bookstore was at the end of spring semester, 2010. Bookstore and ITS personnel estimate that approximately 3000 students would be eligible for the $25 rebate for either the “Pulse” or the “Silver Bullet” clickers.

ITS and the Bookstore would like to offer a $20 rebate to as many of these students as possible who have purchased either of the two types of clickers to take the sting out of this necessary transition to a new vendor. We want the students to have a positive experience with the clicker technology by giving them a buy-back opportunity.
NDSU Technology Action Plan Request

II. Project Overview

1. How does this project meet student needs?

By not penalizing the students monetarily when we change clicker vendors, we show the students that we have compassion for their financial situation.

2. What audience does this project directly serve? What audience is indirectly served? How many students are affected?

By funding this request, the Student Technology Fee will potentially benefit 2000 individual students with a direct rebate. Faculty members are indirectly served through improved student perceptions of clickers. This change of clicker vendors has been faculty and student driven due to increasing pressure on ITS to solve the clicker reliability problem experienced with the previous vendor, einstruction.

3. For projects that target a subset of NDSU’s students, please describe the possibility for broader application in the future.

This is a one-time request made necessary by the change of vendors. ITS takes these types of changes very seriously and avoids them if possible because they negatively affect students financially. We used the same vendor for a decade prior to this. We hope to use the next vendor for a very long time, too.

After we change to a more reliable product, we expect to see an increase in the number of faculty willing to try the technology and use it in the classroom. Just by addressing the problem, we have already seen a surge in interest from the faculty. This increase in clicker use is a future benefit to students because studies have shown that clickers help engage the students, and an engaged student learns more and retains the knowledge longer.

4. Describe both the immediate and long term impact of this project.

The immediate impact will be that potentially 2000 students would receive a rebate for purchased clickers that will not be used on campus after Fall semester, 2011.

The long term impact will be that clicker usage will grow again on campus because of the change to a better product, and the more positive viewpoints of faculty and students.

5. Who will pay for ongoing expenses following the technology fee funded portion of this project (e.g., who will replace hardware or software after it has reached its end of life)?

There will be no ongoing expenses. From Spring semester, 2012, the Bookstore will sell the new vendor’s clickers, and the students who need clickers will purchase them similar to purchasing a textbook.

6. Describe how this project will follow NDSU’s best practices in information technology. (Please make sure the NDSU IT Division staff you consulted signs in Part I of this form.)

Please see the Project Description for more details on using clicker technology in education.

7. What service on campus is most similar to the one proposed here? How does this project differ?

No present service is similar.
**NDSU Technology Action Plan Request**

**III. Project Description (5 pages maximum)**

“Clicker” Technology at NDSU – Our History

North Dakota State has a long, rich history of using “clickers” in the classroom. In fall semester, 2001, a group of faculty was awarded a Student Technology Fee grant to purchase sets of clickers to be used in four classes that met in large lecture halls. The class results were compared to similar classes that did not use clickers, and the findings were positive, especially in student perception and learning.

Shortly after the 2001-2002 clicker pilot, Information Technology Services and the NDSU Bookstore became involved in the support and distribution of clickers as they moved from a pilot scenario to a campus-wide supported initiative. During the five years, clickers grew steadily in popularity at NDSU.

In 2007, NDSU switched from infrared to radio-frequency clicker technology, which made the previous infrared clickers basically worthless. For the first time, students couldn’t use the Bookstore buy-back program to get half of their investment back. ITS received many complaints from students because they had been told to hold onto their clickers until graduation so that they didn’t buy / sell / buy / sell multiple times, but then they were stuck with an obsolete unit.

After NDSU switched to the radio-frequency clickers, students were again told to hang onto their clickers (the “Silver Bullet” model). The campus experienced another three years of steady clicker use. In fall semester 2010, our clicker vendor introduced yet another new clicker called the “Pulse” but continued to support the previous radio-frequency clicker, the “Silver Bullet.” That was when the trouble began. The new system was terribly unreliable and not user-friendly. During that year, multiple faculty members stopped using clickers and encouraged ITS to find a better clicker solution. Students were frustrated after purchasing clickers that didn’t work correctly.

Here is a table of data from the Bookstore that shows the sales and student participation for four semesters:

<table>
<thead>
<tr>
<th>Term</th>
<th>Total Enrollment</th>
<th>Total Sales (units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall ‘10</td>
<td></td>
<td>1,315</td>
</tr>
<tr>
<td>Spring ‘11</td>
<td>3,264</td>
<td>913</td>
</tr>
<tr>
<td>Summer ‘11</td>
<td>140</td>
<td>13</td>
</tr>
<tr>
<td>Fall ‘11</td>
<td>805</td>
<td>339</td>
</tr>
<tr>
<td>Totals</td>
<td>4,209</td>
<td>2,580</td>
</tr>
</tbody>
</table>

If this proposal is funded, potentially 2,000 clicker rebates will be handled through the Bookstore. ITS will announce through various venues that students have a one-time opportunity to sell back their Pulse or Silver Bullet clickers, mentioning that this is funded by the TFAC. Students will bring their Pulse or Silver-Bullet clickers to the Bookstore to receive $20 for buy-back. The bookstore will keep careful records of how many clickers they bought back, to be reimbursed with the TFAC funds granted.

It is doubtful that the Bookstore will find a buyer for the clickers that were bought back, but if they do, they will be sold, and the profit will be returned to the project funds or the Student Technology Fund. The reason why it will be hard to sell them to other universities is because many institutions have experienced the same problems with elnstruction products, and have either already changed vendors, or are in the process of changing.

The buy-backs will continue until the funding runs out – first come, first served. The Bookstore will offer two clicker buy-back times: during the regular Fall semester 2011 buy-back in December, and during the first 2 weeks of Spring semester, 2012. Whatever profit is gained by selling the returned clickers can be made available to students who have not already participated.
NDSU Technology Action Plan Request

IV. Milestones

List the date for each project milestone. These milestones should represent the significant accomplishments that will be associated with the action plan. For each milestone, please indicate its expected outcome and the means for assessing that outcome. (The table may be extended as needed.)

<table>
<thead>
<tr>
<th>Date</th>
<th>Milestone</th>
<th>Expected Outcomes</th>
<th>Means of Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 12/1/2011</td>
<td>Announce Buy-back opportunity to Students in a variety of ways – emails, Spectrum, Bb hub, Union table tents</td>
<td>Students become aware of rebates and that they are funded by the Student Technology Fee.</td>
<td></td>
</tr>
<tr>
<td>2. 12/5/11-12/16/11 1/9/12-1/20/12</td>
<td>Students bring obsolete units to Bookstore and receive $20</td>
<td>Over ½ of the units previously sold will be traded in for the rebate</td>
<td>Bookstore will keep record of # of buy-backs</td>
</tr>
<tr>
<td>3. 1/30/12</td>
<td>After deadline, Bookstore reports to ITS how many rebates were given to students.</td>
<td>Report received</td>
<td>Report received</td>
</tr>
<tr>
<td>4. 1/31/12</td>
<td>ITS reports back to TFAC committee what funds were spent and what is left over, if anything.</td>
<td>Report given</td>
<td>Report received. If funds remain, they will be returned to TFAC, or if desired, another buy-back opportunity will be announced and take place.</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
NDSU Technology Action Plan Request

V. Supporting Documentation

Why do we use clickers in the classroom, and why is it important for students to have a positive experience with them?

The clicker technology has the potential to change a large, intimidating and impersonal classroom into a vibrant, engaging environment, even if there are over 400 students in the room! This can be accomplished by asking clicker questions in class. The students are provided with a time interval within which to register an answer. Once the responses are received, the instructor and students get instant feedback through a displayed bar graph of the tallied results, and it provides a real-time assessment of how well the students understand the content. At this point the instructor may choose to unveil the correct answer, or if there is much discrepancy in the answers, he/she may direct the students to talk to a neighbor about the question and then answer the question again. Invariably, the results improve remarkably between the first and second responses. Through this process, a large class becomes more personal, the students feel less extraneous, and student learning increases. Please note that these benefits can also be experienced in any size classroom, not just large classes.

Here are some documented benefits of using the clicker technology in education:
(from Teaching with Classroom Response Systems by Derek Bruff)

- Increases participation in class, especially in larger classrooms.
- Provides opportunities for interactive peer learning, as described above.
- Shy students can participate within a comfort zone acceptable to them.
- Instructors can reward students for attending class and paying attention.
- Instructors can save time by using the clicker system to award points and uploading them directly into their Blackboard grade book – no manual grade book entries or stacks of papers to tend with.

Here are some interesting instructional examples of using clickers in the classroom:

- The instructor can ask demographic questions at the beginning of the semester and store the results. As clicker questions are asked throughout the semester, the instructor can compare the results of those questions with demographic results to show tendencies. An example might be to store the demographic results of whether the students took the suggested pre-requisite courses, and then show how that data relates to the answer graph of a question asked later in the course. Did taking the pre-requisite courses help students understand the content better?
- Use a clicker question as a “confusion monitor.” Let an anonymous clicker question remain live throughout the delivery of new course content. The clicker question asks the student how confident or comfortable he/she feels about the content as it is presented, and the students can change their answer at any time. The instructor and the students can watch the “confusion monitor” give live feedback, and if the graph shows increasing confusion on the part of the students, the instructor knows that more explanation is needed.
- Have students report when they’re done with a classroom activity. Use an anonymous clicker question that remains live during a classroom activity. The question asks the students to indicate when they are done with the activity. Then the instructor knows when everyone or at least a critical mass of students report that they are done.
- Review content from the previous class period. It is a well-documented fact that students retain their learning better if they review what they have learned. By starting each class period with clicker questions that review content, the instructor encourages better retention by rewarding students who take the time to review. This is also a non-obvious way of taking attendance and encouraging punctuality.
- Leave them hanging! When instructors ask a clicker question near the end of the class period and the students show much discrepancy in their answers, if they don’t reveal the answer until the next class period, the students will moan and groan, but they’ll come back to class curious and ready to continue on with their learning.

Why is it important for students to have a positive experience with clickers at NDSU? If the students are happy, they communicate to the instructor why they’re happy. If instructors get good feedback from students about clickers, they’ll be more likely to continue to use them. If faculty see their cohorts using clickers successfully, they’ll be more likely to adopt clickers in their teaching. Best of all, if students and faculty are enthused, student learning increases!
NDSU Technology Fee Action Plan Request
VI. Budget
(double-click on the form to begin entering data)

1. NDSU ORGANIZATION OR UNIT
   Information Technology Services

2. PROJECT DIRECTOR(S)
   Nancy Lilleberg

3. SALARIES AND WAGES

<table>
<thead>
<tr>
<th>Personnel description</th>
<th>Number employed</th>
<th>Number of months</th>
<th>Funds Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Staff</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Graduate students</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Undergraduate students</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. TOTAL SALARIES AND WAGES $0.00

5. FRINGE BENEFITS

6. TOTAL SALARY, WAGES AND BENEFITS $0.00

7. EQUIPMENT

<p>| | | | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>A.</td>
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<tr>
<td>B.</td>
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<tr>
<td>C.</td>
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<tr>
<td>D.</td>
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<td>E.</td>
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<td>F.</td>
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<tr>
<td>G.</td>
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<tr>
<td>H.</td>
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</tr>
</tbody>
</table>

8. TOTAL EQUIPMENT $0.00

9. MATERIALS AND SUPPLIES

<table>
<thead>
<tr>
<th>Description</th>
<th>Funds Requested</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Award 2000 $20 student rebates for &quot;Pulse&quot; and &quot;Silver Bullet&quot; clickers</td>
<td>$40,000.00</td>
</tr>
<tr>
<td>B.</td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td></td>
</tr>
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<td>D.</td>
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<td>E.</td>
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<td>G.</td>
<td></td>
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<td>H.</td>
<td></td>
</tr>
</tbody>
</table>

10. TOTAL MATERIALS AND SUPPLIES $40,000.00

11. TOTAL TECHNOLOGY FEE REQUEST $40,000.00

12. MATCH (Describe in Match Section)

13. TOTAL PROJECT EXPENDITURE $40,000.00
NDSU Technology Action Plan Request

VII. Budget Justification

We believe that this proposal is appealing because 100% of the funds would go directly back to students, and this is a one-time initiative that won’t need additional funds in the future.

Even though there are potentially 3000 clickers owned by NDSU students currently, we are asking for buy-back funds for 2000 because of the high price tag involved. If funding 2000 $20 buy-back’s is still prohibitive, we would be appreciative of whatever funds could be awarded by the committee.

Here are some breakdowns, in case the budget needs to be trimmed:

- 805 students used eInstruction clickers during Fall semester, 2011, so they are the most recently affected financially. Unfortunately, it would be difficult to identify this set of students unless we did so via the actual classes. 805 X $20 = $16,100
- The committee could decide to buy-back the newer Pulse transmitters but not the Silver Bullets, since the Silver Bullets have been around longer and were most likely purchased as used. Sales numbers predict that there are potentially 2500 Pulse transmitters, but the buy-back would be for approximately 1000-1500 to account for units that were lost, sold or the owners are no longer at NDSU. 1000 X $20 = $20,000

VIII. Budget Match

ITS and the Bookstore personnel will support this initiative with time and effort from their staff. ITS will fund any promotional costs when announcing the initiative to the students, and the Bookstore will provide a special register where students can receive their $20 rebate.
NDSU Technology Action Plan Request

Instructions

A Technology Fee Action Plan Request must consist of the following sections in the order given. Each page should be numbered sequentially.

We will only accept for consideration Technology Action Plan Request forms which are fully completed and signed according to the guidelines listed below.

I. Action Plan Introduction and Authorizations
Please use the following guidelines when completing this form:

1. NDSU Organization or Unit: Enter the name of the official NDSU organization submitting the project request.
2. Title of Project: Give a one-line title of the proposed project.
3. Project Duration: List the month and year on which the project will begin and end. The maximum length of a project is three years.
4. Total Technology Fee Request: List the total amount being requested from the Technology Fee; use line K from the Budget form.
5. Project Director(s): Include name, campus address, phone #, fax #, and e-mail address of the individual who will direct this project. Project directors must be NDSU faculty or staff.
6. Signatures:
   a. Type or print the names of the project director and unit head, and have those individuals sign and date the form.
   b. Type or print the name of the NDSU IT Division consultant who has reviewed your Action Plan and has determined that it can be supported, and have him/her sign and date the form. If you are not sure how to arrange for this consultation, please contact the Office of the Vice President for IT at 231-5646 or cece.rohwedder@ndsu.edu before submitting your Action Plan.
7. Executive Summary: Describe in 175 words or less the technology need that is being addressed, how it will be addressed, and the expected outcome.

II. Project Overview
The project overview section contains questions routinely asked by TFAC members during the review process. If any sections do not pertain to this proposal, please explain why.

III. Project Description
The Project Description should be no more than five pages in length and should include the following information:

1. A full, clear description of project. This description should address
   a. the technology need the project will address,
   b. how this project will remedy that need,
   c. the outcome once the need is addressed, and
   d. the number of students that will benefit.
2. A clear description of how the expertise, equipment, and resources available to the project team, along with the funds requested, will address this need.
IV. Milestones
List the milestones for the project and the expected date each milestone will be completed. For each milestone, briefly describe the expected outcome and means of assessing a successful outcome.

V. Supporting documentation
Supporting documentation, such as outside reviewer’s comments and department or administrative endorsement, may be appended to the Project Description.

VI. Budget
1. **NDSU Organization or Unit**: Enter the name of the official NDSU organization submitting the project.
2. **Project Director(s)**: Include name(s) of the individual(s) who will direct this project.
3. **Salaries and Wages**: By category, include number of personnel employed, months employed and the funds requested.
4. **Total Salaries and Wages**: This is a formula field and will automatically calculate.
5. **Fringe Benefits**: Use the following rates: Staff = 30%; Graduate and Undergraduate Students enrolled in classes during the work period = 1-2%; Graduate and Undergraduate Students not enrolled in classes during the work period (for example students working but not taking classes during the summer) = 10%.
6. **Total Salary, Wages and Benefits**: This is a formula field and will automatically calculate.
7. **Equipment**: List item name, cost and quantity of each item; include every such item in the Budget Justification section and explain why it is important to the project. Include installation and maintenance costs in your estimates (Note: You will be expected to follow the state-approved purchasing guidelines when purchasing equipment.)
8. **Total Equipment**: This is a formula field and will automatically calculate.
9. **Materials and Supplies**: List name, cost and quantity for non-equipment items; include every such item in the Budget Justification section and explain why it is important to the project. (Note: You will be expected to follow the state-approved purchasing guidelines when purchasing materials and supplies.)
10. **Total Materials and Supplies**: This is a formula field and will automatically calculate.
11. **Total Technology Fee Request**: This is a formula field and will automatically calculate.
12. **Match**: State the amount of match your organization/unit will provide; describe this match in the Match section.
13. **Total Project Expenditure**: This is a formula field and will automatically calculate.

VII. Budget Justification
The Budget Justification should include a description of each item listed on the budget page and a justification for the need of that expense to the project.

VIII. Budget Match
The Budget Match should include an itemized description of the budget match your organization/unit will provide.

**Project Directors will receive an email indicating whether the Technology Action Plan Request they submitted was approved or not. The approval narrative will include information on how funds will be disbursed, whether additional information is needed prior to disbursement, and the reporting requirements.**