



Microsoft® MultiPoint™ Pilot Case Study



Table of Contents

Microsoft MultiPoint Pilot Case Study

This case study reflects interviews and observations conducted in Hanoi, Vietnam, during December 2008. They are taken from a representative Hanoi school piloting technology based on the MultiPoint™ SDK.

Executive Summary.....	3
Challenges and Benefits.....	4
The Pilot Program.....	4
In the Classroom.....	5
School Principal / Headmaster.....	6
Teacher.....	7
Students.....	8
Conclusion.....	9
Legal Disclaimer.....	10



Microsoft MultiPoint Pilot Case Study

This case study reflects interviews and observations conducted in Hanoi, Vietnam, during December 2008. They are taken from a representative Hanoi school piloting technology based on the MultiPoint™ SDK.

Executive Summary

DEFINITION OF TERMS

- *MultiPoint is a technology for social learning activities created by Microsoft Corporation. It allows multiple people to share a single PC using multiple mice.*
- *Mouse Mischief is a MultiPoint application that allows teachers to create content in PowerPoint that can be accessed by a large group of students.*
- *MultiPoint is being used by schools on a voluntary basis to increase student engagement, develop teamwork skills, and empower teachers to create novel instructional activities.*

This case study profiles a classroom experience using Microsoft MultiPoint in a pilot program in classrooms at the Le Quy Don school outside Hanoi, Vietnam.

Despite a low teacher-to-student ratio (as much as 1:60) and frequent power failures, Le Quy Don's teachers were able to offer more technology access to its students with a MultiPoint technology called Mouse Mischief. By combining traditional blackboard and chalk techniques with the interactive benefits of Mouse Mischief, teachers were able to present a more engaging classroom experience.

This pilot program is proving to be a success as the MultiPoint system helps teachers invent new ways to help students work together and make the overcrowded classrooms "feel" smaller. Students enjoy the change in active peer learning, welcome the opportunity to work cooperatively in small cohesive groups, and are most enthusiastic about using computers in the classroom.



Le Quy Don, outside central Hanoi, is evaluating MultiPoint to "improve teaching practices for all school subjects."



Challenges and Benefits

Challenges at Le Quy Don

- Hardware problems, such as broken mice and power failures, can cause computers to reset.
- Teachers may need to experiment if small groups should share a mouse or if each student should have his/her own mouse.
- In large-group activities, teachers need to learn how to control the class and the natural exuberance that students feel when seeing their cursors on the screen.
- “Best practices” for teachers on how to use the system are still evolving.
- Headmasters and principals need to support the evaluation of Mouse Mischief in schools, which will take more time and effort.

Benefits of MultiPoint

- The system helps schools that lack sufficient resources to leverage an existing technology infrastructure to increase access to more students.
- Students remain engaged because they care about their scores and enjoy being able to work with the content projected on a big screen.
- Teachers feel connected to their students because they can gauge individual and whole-group status quickly and frequently.
- MultiPoint has built-in flexibility—usage varies according to teaching style; there is no “correct” way to use Mischief.
- The system helped teachers invent ways to make the class feel “smaller” than it really was.

The Pilot Program



While sitting at their desks, students participated in collaborative activities, keeping them engaged.

In October 2008, Microsoft Vietnam set out to continue work that had begun earlier in Haiphong, Vietnam, by contacting a set of Hanoi schools about evaluating a technology predicted to change the face of classroom technology in their country and beyond. The technology, MultiPoint, allows multiple people to use a single computer simultaneously, using common computer peripherals like mice. This technology provides unique social learning activities to be created for students. One such application, Mouse Mischief, was created by researchers at Microsoft Research Asia. It is a PowerPoint® plug-in application that allows teachers to create interactive lectures for the classroom. Students in the classroom sit at their desks and are given mice to participate in activities created by the instructor.

Twenty-two schools agreed to take part in the trials, including the Le Quy Don lower secondary school (equivalent to grades 6–9 in the United States), which is the focus of the following case study. This upper-middle class public school was chosen because both the headmaster and teachers are passionate about improving teaching methodology. It is a relatively well-funded school in the midst of an expansion, but it does not have full-time power and regularly runs devices off a central generator.

Le Quy Don is located outside the city center of Hanoi. It is a relatively young school that was established in 1995 to meet the rising population of Vietnam's capital city. The school, with 1,548 students and 62 teachers, has an established reputation for high-quality teaching and students who perform well on the city's secondary school entrance examination. The school principal, Ms. Lan, works tirelessly on ways to improve student performance, teaching practices, and school facilities.

This case study profiles the headmaster, a math teacher, two students, and the general classroom experience using MultiPoint in classrooms at Le Quy Don. The goal is to give the reader a sense of what challenges and benefits arose in this school when running a MultiPoint pilot.

In the Classroom

Fast facts:

- MultiPoint can complement a diverse set of teaching styles; the system does not impose a defined flow or style on the teacher.
- Students remain engaged because they care about their scores and feel empowered to have an impact on things projected onto the large screen.

How does MultiPoint complement existing teaching practices at Le Quy Don? What did the teacher use it for and how did students react?

During this pilot phase, Le Quy Don set up a "Mischief Room" where an LCD projector was installed along with USB extension cables that ran along the floor. The cables were connected to normal, durable, and affordable USB mice. Each mouse was shared by 3 to 6 students (1 to 2 tables) who took turns controlling the mouse.

At the start of class, the Mouse Mischief application was projected on the screen, and each group chose a cursor that was matched to the names of students in their group. The students immediately became engaged during this fun initialization process. They were excited about using MultiPoint during class, and they knew their scores would be recorded. Thus, the students paid more attention during class. Once the teacher had their attention, she could choose how to begin teaching: using the blackboard, lecturing, using PowerPoint, or even starting immediately with the MultiPoint activity.

Teachers who had experience using PowerPoint were more creative in the types of MultiPoint activities they developed. One teacher used multiple-choice "polling" questions throughout the lecture, finishing with a small number of engaging and instructive competitive group activities at the end of class. For example, the teacher handed out a paper worksheet activity, and then she presented a virtual version of it on-screen. Student groups submitted their answers to compete with one another; they felt their answers had greater impact because they were projected on-screen.

Class flow varied according to the teacher's style. For new material, the teacher used a mixture of blackboard activities and PowerPoint to teach her lesson, and then she closed the class with a group review of the content using MultiPoint. For classroom sessions that focused on reviewing content, the teacher used PowerPoint throughout the lesson, mixing in MultiPoint activities as appropriate.



Le Quy Don uses normal, low-cost USB mice with hidden cables that run along the floor. They are upgrading to wireless mice.

At the end of class, the teacher pulled up a scoreboard showing which team was awarded the highest number of points. The students eagerly anticipated this activity and took great pride in their scores.

School Principal / Headmaster



Ms. Lan, principal at Hanoi's Le Quy Don school, explains why she decided to implement MultiPoint technology in several of her classrooms.

Fast facts:

- The headmaster participated in the pilot because she wanted to experiment with methods that improved student performance in a sustainable way.
- The school was not sure if it should invest in one mouse per child or have small groups of students share mice.
- The school's existing computer resources did not allow all students to have regular computer access; MultiPoint addressed this problem.

Ms. Lan is a former teacher committed to the success of her students. She worried about her schools' teacher-to-student ratio (usually 1:60) and how her students would develop skills needed to succeed in an information economy.

Before the 2008 school year began, three teachers from Le Quy Don attended a MultiPoint training session at Hanoi Teacher Training College. They came back excited and urged Ms. Lan to implement and conduct an evaluation of the MultiPoint system.

As Ms. Lan explained, "We participated [in the MultiPoint pilot] because we wanted to be progressive and we are interested in experimenting with ways to improve teaching practices. We wanted our young teachers to be pioneers. We wanted to be at the forefront of our country's schools."

MultiPoint could be seen "as an efficient use of resources." Not all students took IT classes due to the lack of teachers and computers, but now MultiPoint could be an effective way to share IT education with a larger number of students. Ms. Lan also saw MultiPoint as a potential improvement for teaching all school subjects. Because MultiPoint could be used for any subject, students increased their overall "hands-on" time with computers.

The classroom was set up so that students in small groups shared one mouse rather than each of the 60 children in the classroom having his/her own mouse. Ms. Lan was concerned that "there were not enough mice for each student, which was a potential problem. We needed to see if we really needed one mouse per student or if sharing was feasible. Different teachers had different reactions."

Ms. Lan evaluated Mouse Mischief in her school for one year before deciding what next steps to take. "The initial reactions of both the teachers and students were positive. If it is effective and people are still interested, I will encourage it to be used in more classrooms." Ms. Lan plans to conduct qualitative observations in the classrooms and rely upon feedback from the teachers as to how student performance, attitudes, and engagement were affected by the new technology.

"I'm not going to use technology just for the sake of using it. Blackboard and chalk are very useful. But I'll use the technology to try and help with low teacher-to-student ratio issues and to experiment with ways to improve teaching practices and student motivation."

Teacher

Fast facts:

- MultiPoint helped teachers address the low teacher-to-student ratio problem.
- Teachers had to logically integrate interactive activities with traditional lessons.

Do Minh Anh, 26, has been teaching 8th grade math and IT at Le Quy Don for almost two years. She was one of four teachers chosen to take part in the training and evaluation of MultiPoint technology in her school. "I volunteered for this project because I am motivated to learn everything I can about my job.

"[Using MultiPoint] is totally different from the traditional way of teaching because students have the ability to interact with teachers more. Students get more feedback, and they get it faster.

"The biggest challenge I have in my teaching is the size of the class." It is normal for Ms. Minh Anh to have 55 students in one of her math classes. "I would prefer 20–30 students in each class." To maximize the amount of attention she could give each child, Ms. Minh Anh used MultiPoint to ascertain the classroom status more easily, adjusting her teaching accordingly. "[By using MultiPoint], my teaching was more open and transparent with my students. My teaching style became closer to the students. I could feel what the students felt, and I could collect feedback quickly and easily."

Ms. Minh Anh felt that students were engaged when using MultiPoint because they became creators, not just consumers of content. By contributing content on a shared display, they had ownership over class flow and content.

In her class, 3–5 students shared one mouse, taking turns to control it. Although this may seem undesirable, Ms. Minh Anh used it to her advantage. "I've used PowerPoint in class before so I could use that skill, but MultiPoint let students be more interactive in my classes. Students worked more actively and worked well in groups. Vietnamese students like team-building exercises and MultiPoint promoted that. A small group of students had to discuss among themselves more than usual to get a final answer because the system only allowed one answer, and it was visible to everyone else. I want each classroom in our school to use MultiPoint."

The major challenge Ms. Minh Anh saw with the MultiPoint system was that students were sometimes distracted by the interactivity. She sometimes felt a "lack of control" if she did not take steps to guide usage appropriately. This was something she believed would come with practice and experience. "MultiPoint worked well in a well-behaved class, but it was harder to use in a rowdy class."

Ms. Minh Anh saw MultiPoint as being useful for reviewing content and not for teaching new content, where she still preferred using a blackboard. She is considering how MultiPoint can be used to teach new content and believes "that will come in time."



Do Minh Anh has been using MultiPoint in her Math class since December 2008.

Students



7th grade students in Do Minh Anh's math class remained engaged with the material despite the class's large size.

Fast facts:

- Students believed MultiPoint was very helpful in developing teamwork skills.
- Even when sharing mice, students enjoyed using MultiPoint.
- Students felt more engaged in class and liked contributing to the content.
- Students enjoyed interacting with the teacher and other classmates.

Duong was a 13-year-old 8th grader at Le Quy Don. She was from Hanoi and did not use a computer at school because she was not enrolled in any IT classes. Duc was the same age as Duong, and they shared some classes. He was enrolled in an IT class that met three times per week. They were relatively successful students and performed well on assessments.

Both Duong and Duc used MultiPoint in small groups in their biology and math classes. Despite the fact that not everyone got his/her own mouse, “almost everybody in the group got a turn.” They were accustomed to, but frustrated with, classrooms of 60 students trying to get the attention of their teacher.

Duong mentioned that MultiPoint was different from normal teaching because “it was easier to understand the lesson and the whole class was involved. [Combining traditional teaching with technology like MultiPoint] worked well because sometimes the traditional way worked the best.” She claimed that MultiPoint “made students eager to participate; they loved having instant feedback on their answers to the teacher’s questions.”

Duc concurred; he believed that MultiPoint complemented traditional teaching, depending on the teacher’s style of delivery and the subject matter. “You can make teaching effective as with biology but with other subjects, it might be more problematic. In traditional teaching, students were distracted more often in class. But still, I’m not sure if student learning was improved or if the students were just happier and more engaged. Basically, student performance was most important, and I do not think a technology can teach students—the teacher must teach the students.” Indeed, Duc added that MultiPoint should be used for reviewing lessons taught in the traditional way.

Solidarity and effective group work are held in high regard in Vietnam. Duong noted that “[MultiPoint] helped them develop their teamwork skills. The group discussed their answer and made a final choice, and then it was displayed to the teacher and the whole class. In traditional classes, the teacher would just point to an individual student so only that student answered. Also, MultiPoint scoring improves the learning atmosphere. You get more competition and more team work.”

Regarding how teachers should use MultiPoint in their classes, Duc suggested, “It would be better if the teacher did not try to pack in too much content. In teaching with computer technology, you usually have more exercises, but when there are too many, the students can feel overwhelmed.”

Conclusion



Two students at Le Quy Don describe their experiences using Mouse Mischief in class.

This case study profiles the use of the Microsoft MultiPoint application Mouse Mischief in a pilot program in the Le Quy Don school outside of Hanoi, Vietnam. Although actual usage still needs to be fine-tuned and best practices better identified for the teachers, the successes of the program outweigh the challenges. The MultiPoint system provided the opportunity to overcome issues schools face like large class size. It created an active, collaborative learning experience that engaged students.

By combining standard teaching techniques, such as blackboard and lecturing, with MultiPoint, the school, the teachers, and the students benefitted: The school found an affordable solution that provided a simple but very effective way of instantly multiplying the value of a shared computer. The teachers felt more connected to their students because they could gauge the students' progress, individually and as a group, more quickly and frequently. The students were enthusiastic about working together in small groups and receiving immediate feedback when their answers appeared on-screen.

The story of Le Quy Don is yet another successful example of Microsoft making a positive difference in the global education field—opening up classroom activities, inviting teacher/student collaboration, improving learning experiences, and making education more “fun.” The students are the real winners as they become more computer literate, better educated, and better prepared to enter the 21st Century technology workplace and economy.

Legal Disclaimer

This case study was commissioned by Microsoft Corporation and written one month into the pilot. Author: Neema Moraveji, Learning Sciences and Technology Design, School of Education, Stanford University; Stanford, California.

The information contained in this document represents the current view of Microsoft Corporation on the issues discussed as of the date of publication. Because Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Microsoft and Microsoft cannot guarantee the accuracy of any information presented after the date of publication.

This white paper is for informational purposes only. MICROSOFT MAKES NO WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AS TO THE INFORMATION IN THIS DOCUMENT.

Complying with all applicable copyright laws is the responsibility of the user. Without limiting the rights under copyright, no part of this document may be reproduced, stored in or introduced into a retrieval system, or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), or for any purpose, without the express written permission of Microsoft Corporation.

Microsoft may have patents, patent applications, trademarks, copyrights, or other Intellectual property rights covering subject matter in this document. Except as expressly provided in any written license agreement from Microsoft, the furnishing of this document does not give you any license to these patents, trademarks, copyrights, or other Intellectual property.

Microsoft[®]