Digital Ink in the Classroom

Authentic, Efficient Student Engagement

IDC
Analyze the Future

In This Study

In this IDC report, sponsored by Microsoft, IDC conducted a research study with 685 teachers who are using computers in the classroom to understand their classroom technology usage, and specifically how they are using Digital Inking devices. The study was conducted using an on-line survey of Educators in the United States drawn from MCH Teacher data. All responses and verbatim comments in this study have been kept anonymous.

In this context, Digital inking means a device that supports either an active or passive Stylus. An active Stylus typically ships in the box with the tablet, detachable, or touch notebook. It often has a button on the side and includes electronics inside that make it work with a digitizer in the device screen. An example of a device with an active Stylus is a Surface. A passive Stylus is typically sold separately from the device, and doesn't include any electronics inside. It's essentially acting like a more precise fingertip. An example of a device that can be used with a passive Stylus is an iPad. In this study, we examined Digital Ink Educators that used a computer with an active Stylus for teaching. The objective of this research is to examine the impact of Digital Inking for Teachers in contrast to prior studies examining the importance and impact of handwriting to student learning.

Impact of Digital Ink in the Classroom

Digital Ink can help transform the classroom experience—for students and teachers.

Examining the classroom practices of many teachers, research shows that Digital Ink enables:
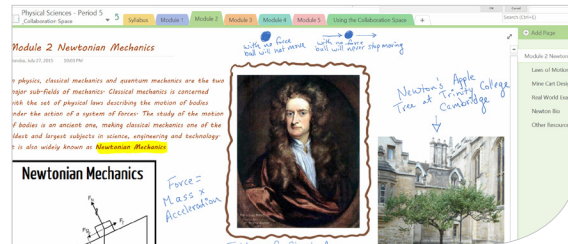
What Does the Classroom Look Like?

Analog Classroom

"When I taught geometry and got to the question that nobody in the class understood, I had to stop class and draw on the whiteboard. It took five minutes, and then I had to add labels. Only after all this, could I finally start talking about how to solve it."

Digital Classroom

"Now I just grab my tablet, snip it, put it in OneNote, and start writing in seconds. It's absolutely better."

—**Math and Science Teacher**

> "Having a tablet PC with a wireless projector in a classroom is huge—a lot of what you're teaching requires annotating or presenting while walking around.
> —**Elementary School Teacher**

Good news

98% of surveyed classrooms frequently use computers, laptops or tablets for instruction.

Bad News

More than half of classrooms are tethered to a desktop computer, another **30%** have a traditional notebook computer—smaller, but connection to the work while walking around is awkward.

Reason for Hope

Some classrooms look different – about **10%** of classrooms use some form of tablet with touch-screen, that makes simultaneous interaction between teachers, students and the instructional material more seamless and authentic. But, **75%** of those tablet users are still tied to a keyboard – only **25%** used a stylus (split between passive and active stylus designs).

> "Without digital ink we would use the computers as a typewriter or for research…but we would never use it for math, science, or art.
>
> —**Elementary School Teacher**"
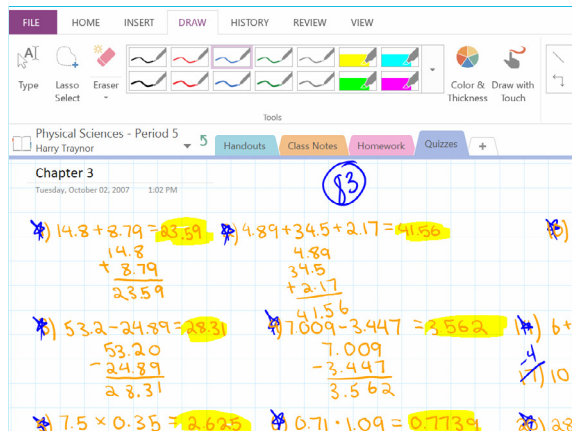
Substantial Time Savings for Educators

Stylus-using educators report time savings:

4 of 5

said it saved them time when preparing and administering assessments.

5 of 6

stylus-using educators said it saved them time when facilitating and guiding extra curricular activities.

> I'm saving huge amounts of time. I don't bring papers home to grade anymore— I do it all at school. It's all on my computer so I can look at it during any open period. I have a 40-minute open period, and normally I wouldn't start grading because I couldn't finish in time. With a tablet PC, that's not an issue.
>
> **—Elementary School Teacher**
>
> Consider white boards: I erase and redo every period, six times a day. Now, I just complete a template on OneNote, and fill it in.
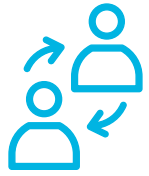>
> **—High School Science Teacher**

> " Now, I have exactly what I want as a teacher. I can sit down with this device and pen, open up a piece of [digital] paper, give feedback, and then go onto the next digital paper. "
>
> —Math and Science Teacher

Authentic, Timely Feedback

Stylus-using educators describe improvements in their ability to provide feedback:

50%

say stylus use saves time grading assignment, paper or exercises.

68%

say that using a touch-based device with a stylus increases the quality of communications with students.

> Providing feedback needs to be quick and flexible…Classroom time for teachers needs to be focused on students.
>
> **—High School Math Teacher**
>
> I go from notebook to notebook, reviewing each person's work. I can see right away if they're having a problem and I can help, instead of waiting until they've done the whole thing wrong.
>
> **—High School Math Teacher**

IDC
Analyze the Future

> " Digital ink is transformational in terms of the way feedback for students occurs. Often the feedback takes the form of simple annotations, markups, and highlights. You don't want a student to have to mouse over a pop-up comment—that just doesn't work. "
>
> **—Math and Science Teacher**

Efficient Class Management

Stylus-using educators report efficiencies in daily activities:

67%

said their stylus-based device helped save them time when preparing materials and curriculum for instruction.

2 of 3

said it saved them time when preparing and assigning homework.

> **"**
> I used to take big stacks of paper home to do correcting – no place to spread out in classroom…now I just need a computer and can grade while working.
> —**Elementary School Teacher**
>
> Now I can grade in-between breaks or when I have small windows of time. I can use my time more efficiently – it's easier to stop and start because I don't lose my place.
> —**Elementary School Teacher**
>
> I'm so much more organized and I can find all my notes.
> —**Elementary School Teacher**
> **"**

> " Now, I'm ahead of the curve. And I'm not asking myself, 'How do I present this to my students?' I'm asking myself, 'How do I present the material to my students better?'
>
> —**High School Math and Science Teacher**

More Personalized Learning Environments

Before

Personalized learning using paper-based methods is unmanageable before Digital Ink and OneNote

"The kids would all know who had different [handouts], who was working at what level. The teacher has to keep track of all the different stacks and correct those and then get them back to the kids."

—**Elementary School Teacher**

After

Digital Ink and OneNote helps teachers develop and manage personalized learning

"We're working on a whole strategic plan to create personalized learning plans. We'd never be able to do this without the combination of OneNote and Digital Ink. We can serve all these different students and let them work at their own pace while not overwhelming the teacher."

—**Director of Technology, K-12**

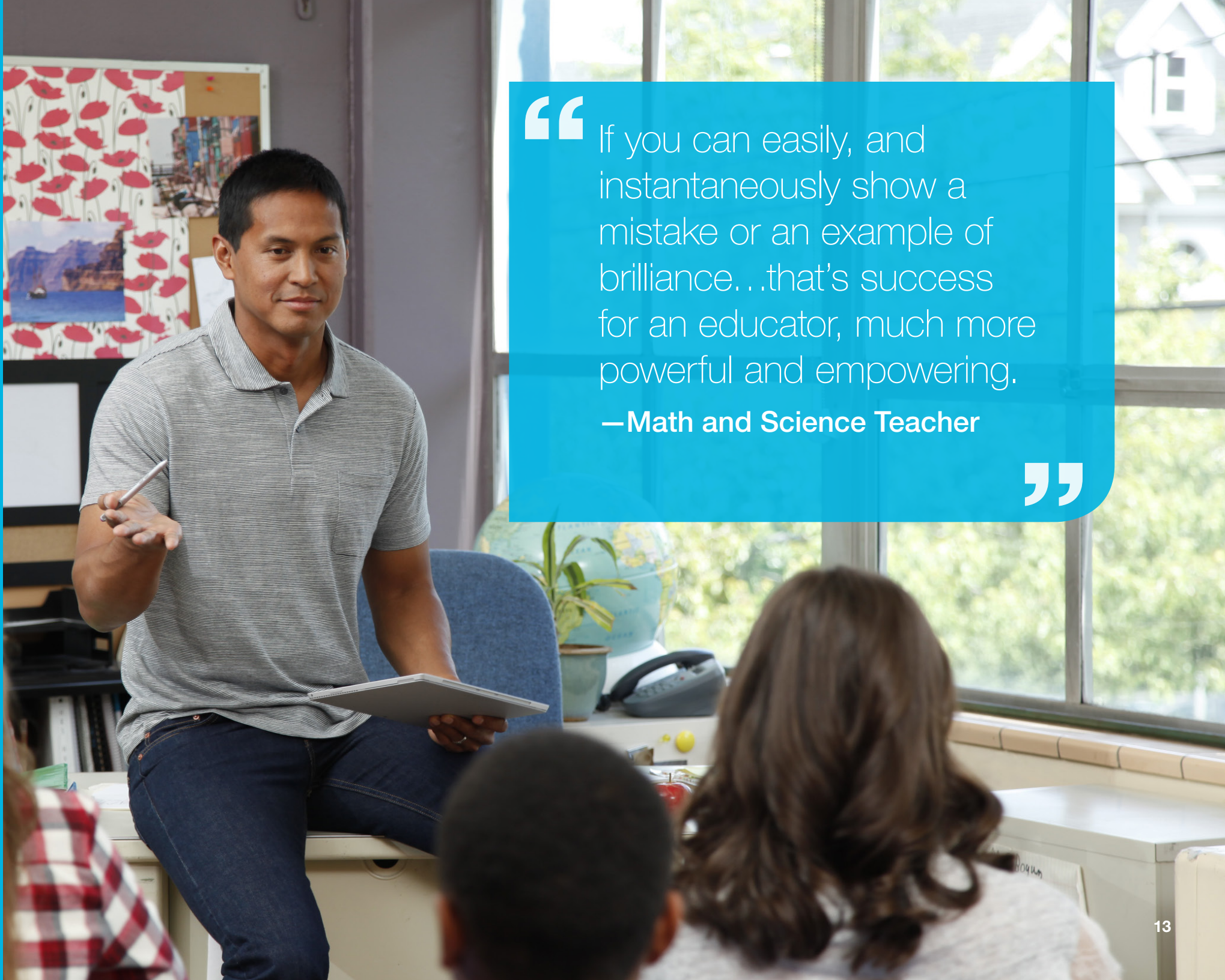Allows teachers to connect with students— even if not during class

"If it's really busy…I can still write them a note in real time saying, 'Good work on this,' or 'Can I help you in some way?'"

—**High School Math Teacher**

Provides medium for tailored interaction to fit the student

"That way, for the child who's very shy it's really easy for me to connect with them and have them come to me without it feeling like I've called on them."

—**Elementary School Teacher**

> "If you can easily, and instantaneously show a mistake or an example of brilliance…that's success for an educator, much more powerful and empowering.
>
> —Math and Science Teacher

Less Technology 'Friction' for Students and Teachers

Stylus-using educators describe ease-of-use benefits, including:

3 of 4
are not frustrated by technical issues.

60%
say it reduces time spent posting resources online.

4 of 5
have not had issues with battery life.

> "
>
> Using OneNote, students don't have to worry about saving files to storage sticks, just print to a shared notebook and I have it.
> — **Elementary School Teacher**
>
> It's transparent…I don't save [files]. Once synced, everything is where it's supposed to be, and you're able to focus on what matters.
> — **Math and Science Teacher**
>
> The biggest difference is I'm no longer concerned if the students are writing down the notes on the board, [but rather] are they engaged with what I'm telling them.
> — **Director of Technology, K-12**
>
> "

IDC
Analyze the Future

"The streamlining of the preparation time allows me to direct my efforts interacting with kids.

—Math and Science Teacher
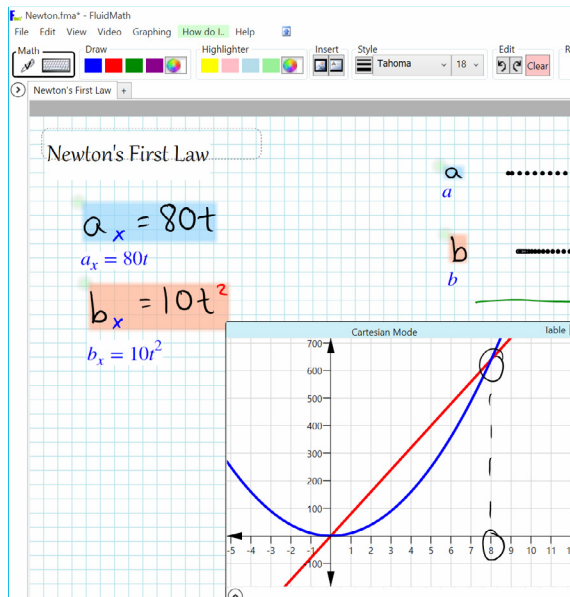
Increased Levels of Student Engagement

Stylus-using educators report improvements in classroom engagement:

90%

believe stylus and touch allow them to improve the quality of preparing materials and curriculum for instructions and activities.

88%

believe stylus and touch allows them to increase the quality of the instruction to the entire class.

> I can find maps and put them somewhere all the kids have access to. And in 30 seconds I can have them writing on top of those maps together or separately. You can't do that in a regular classroom or on a regular computer.
>
> **—Math and Science Teacher**
>
> At the end of the day, writing, sketching, highlighting, drawing, and annotating are a huge part of the teaching and learning process.
>
> **—Math and Science Teacher**
>
> On my Surface I can literally draw a line through multiple equations. Now, it's not just writing, it's making a connection between those equations and even graphing it for me.
>
> **—High School Math Teacher**

> " The Surface with Digital Ink gives me the ability to be anywhere and everywhere in class, at once. I'm not tied to the front of the room. It allows me to manage the class without actively managing the class. "
>
> **—Elementary School Teacher**

Real Measureable Benefits

Stylus-using educators report improvements in outcomes:

88%
say it allows them to increase the quality of the instruction to the entire class.

93%
say it allows them to improve the quality of preparing materials and curriculum for instructions and activities.

75%
believe Digital Ink allows them to increase the quality of communication with parents.

75%
believe stylus with touch allows them to increase the quality of their preparation and assignment of homework.

"

Last year I printed out about 900 pieces of paper per student. That includes tests, quizzes, everything. This year I've printed out a total of about 40 pages per kid. That's a massive reduction.

— **High School Math Teacher**

I used to order about eight or nine reams of paper for my classroom. This year, I've used less than one ream for the whole year.

— **Elementary School Teacher**

"

IDC
Analyze the Future

"
Teachers without Surface and Digital Ink don't even consider working the way we do, because we do things that are otherwise impossible… this has probably been the most significant change in our classroom.

—Director of Technology, K-12
"

Summary of Findings

With an ever increasing range of classroom device options, school leaders and district decision makers should consider devices that will most directly support authentic, and efficient student-teacher engagement and reduce the time teachers spend on non-teaching related activities.

Consider devices and technologies that directly support student-teacher engagement:

- Handwritten comments as the preferred format for student feedback

- Timely, clear, and discrete ways of offering assistance to students

- Flexible tools to support different learning styles and personalized learning environments

Also consider devices and technologies that reduce time spent on non-teaching activities:

- Digital record keeping and grading

- Reduce paper-based processes such as photocopying, distributing and collecting handouts

- Easy for teachers to organize and prepare instructional resources

- Limited need for technical troubleshooting

Teachers consistently report benefits from being able to clearly and quickly communicate feedback to students at the "teachable moment". Using a notebook or tablet with an active stylus combines the text clarity of a typewriter, with the personalization and flexibility of a pen and paper, and the immediacy of instant messaging to open and maintain a personal connection with students at the precise moment they would be receptive to feedback.