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# The Total Economic Impact™ Of Microsoft Windows Devices For K-12 Education

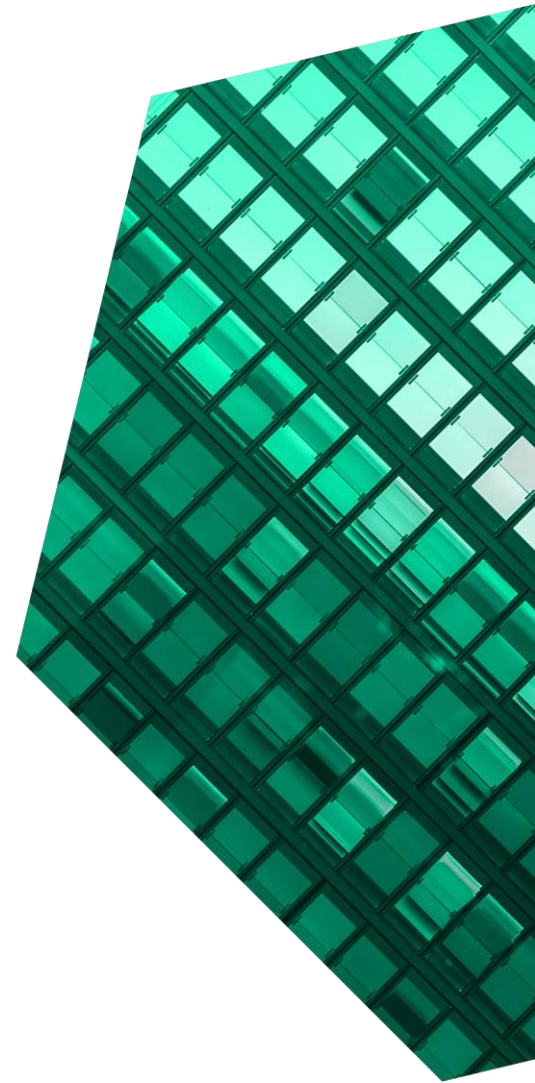
Cost Savings And Business Benefits  
Enabled By Devices For K-12 Education

**JULY 2023**

# Table Of Contents

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<b>Executive Summary</b> .....	<b>1</b>
<b>The Microsoft Windows Devices For K-12 Education Customer Journey</b> .....	<b>6</b>
Key Challenges .....	6
Investment Objectives.....	7
Composite Organization.....	8
<b>Analysis Of Improved Student Outcomes</b> .....	<b>9</b>
<b>Analysis Of Benefits</b> .....	<b>12</b>
Increased Teacher Productivity .....	12
Administrator Time Savings .....	14
avoided Cost Of Legacy Non-Windows Devices .	16
Time Saved On Deployment Of Devices .....	18
IT Operational Productivity.....	20
Avoided Security and Privacy Costs.....	22
Flexibility.....	24
<b>Analysis Of Costs</b> .....	<b>25</b>
Student Device Costs.....	25
Licensing And Training Costs .....	27
<b>Financial Summary</b> .....	<b>28</b>
<b>Appendix A: Total Economic Impact</b> .....	<b>29</b>
<b>Appendix B: Interview And Survey Demographics</b> .....	<b>30</b>
<b>Appendix C: Endnotes</b> .....	<b>31</b>



## ABOUT FORRESTER CONSULTING

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## Executive Summary

Adoption of digital devices for educational purposes grew significantly in recent years as schools and districts navigated remote learning. As adoption expanded, student and faculty expectations around device and software capabilities increased. Areas requiring consideration included improving student engagement, streamlining administrative tasks, and expanding teachers' ability to deliver lessons. To best serve students and faculty, educational organizations must be critical of the technology they are adopting.

Microsoft Windows devices available for K-12 education are cost competitive and provide educators with tools to effectively support student learning, collaboration, and creativity. Microsoft's goal is to ensure that no matter where students and teachers are, Windows devices are optimized to provide a comprehensive and secure learning experience.

Microsoft commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) schools may realize by deploying Microsoft Windows devices for K-12 education.<sup>1</sup> The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Microsoft Windows devices on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed nine representatives from four school districts in three countries and surveyed 171 respondents across 16 countries with experience using Microsoft Windows devices for K-12 education. For the purposes of this study, Forrester aggregated the experiences of the

### KEY STATISTICS



Return on investment (ROI)  
**90%**



Net present value (NPV)  
**\$5.7M**

interviewees and survey respondents and combined the results into a single composite organization, a US-based public school district serving 30,000 students across 50 schools grades K-12. While the composite organization is US based, the gains in district performance shown are applicable to other regions and district types.

Prior to using Microsoft Windows devices, interviewees noted how their districts had neither a standardized operating system nor a set of devices in place. Educational technology consisted of both Windows and non-Windows devices and software that the districts and schools purchased as part of a push to move to a 1:1 device program for digital learning.<sup>2</sup> Inconsistency in devices across the student and teaching body led to imbalanced learning experiences in the classroom, concerns about the lifespan of the devices, and security issues after several phishing attacks.

Increase in productivity for each teacher per week

**1 hour**



After the investment in Microsoft Windows devices, the interviewees had administrators, teachers, and students using Windows-based devices starting in the second grade. IT registered these devices through Microsoft Autopilot and managed them using Intune with Windows 11. Almost immediately, teachers began incorporating applications available on Windows devices as part of lessons, and students with special learning needs took advantage of the devices' accessibility features. This change in approach helped faculty expand communication with students and improve engagement, producing greater student performance.

Devices lasted longer at the interviewees' districts as well, with fewer devices completely breaking or needing repair. A standardized operating system and set of devices for school districts helped administrators monitor the status of all their devices and the security threats facing them, eliminating potentially costly risks. Distribution of devices was also made simple for IT, since Microsoft Autopilot and Intune automatically registered devices and preloaded them with the same applications and settings across the district.

## KEY FINDINGS

**Qualitative benefits.** Benefits that provide value for the composite school district but are not quantified for this study include:

- **Greater student performance and engagement.** Since adopting Windows devices, students' grades noticeably improved at the interviewees' school districts. One interviewee shared that their school district moved from the bottom third to the top third of districts in their state in student performance since deploying Windows devices. Immersive Reader and Microsoft Teams were widely used applications that supported communication, collaboration, and performance tracking in classrooms. Integrating these applications with others like OneNote, PowerPoint, and Word further streamlined student learning experiences.
- **Improved student accessibility.** Key drivers of student engagement included Windows devices' and applications' accessibility features to support student specific needs, such as vision, hearing, and mobility. These features helped to remove barriers for students with classwork and helped teachers to fully evaluate students' learning comprehension and performance.
- **Better student preparedness post-graduation.** Interviewees saw introducing Windows devices to students as an opportunity to prepare students' digital skills for college and beyond, where Windows applications are regularly used. Likewise, applications exclusive to Windows, such as several in the arts, supported learning experiences for students via digital channels that otherwise would not have taken place.

**Quantified benefits.** Three-year, risk-adjusted present value (PV) quantified benefits for the composite school district include:

- **Teacher productivity increases by 1 hour each week.** The integration of Windows applications across its services supports school district teachers at the composite organization. It also enables them to access and review classwork within OneDrive folders and Microsoft Teams without having to collect and hand back papers to students. Cloud storage of documents and class materials helps substitute teachers fill in when teachers are out. Additionally, Microsoft Teams allows teachers to monitor assignment completion and time spent on work, which informs them where to focus support for students.
- **Administrators recover over an hour of time each week.** Education Insights in Microsoft Teams helps administrators (e.g., principals, vice principals, and superintendents) circumvent hours spent compiling student performance data

into reports on a weekly or monthly basis. The reliability of Windows devices also mitigates decision-making time around device purchases and replacement orders.

- **Avoiding thousands of dollars in non-Windows device costs.** The composite school district sees cost savings from the reliable performance of Windows devices and the fewer components that needed to be replaced, like storage and RAM, each year. More critically, the school district has fewer laptops to replace altogether since adopting Windows devices and is able to recapture budget previously allotted for device replacement.
- **IT team saves a half hour on deployment of each Windows device solution.** IT employees automate registration of Windows devices with Microsoft Autopilot's autoenroll capabilities to register devices, which streamlines device deployment. Microsoft Intune further accelerates deployment by enabling IT teams to automatically configure system and security settings across multiple devices with only a few clicks.
- **IT team saves 2.5 hours weekly on repairs, maintenance, and help desk tickets.** Managing Windows devices, each with the same settings and updates, helps the composite organization's IT team identify the root cause of issues when they appear and make changes across the devices before they became larger. The ability to share interactive screens through Teams helps expedite the IT team remotely fixing device problems. IT teams reallocate time saved toward any repairs or maintenance that devices need.
- **IT avoids five hours of privacy- and security-related work each week.** IT time spent reviewing security threats and system vulnerabilities is mitigated with the deployment of Windows devices, particularly with the Microsoft 365 Education A5 Security license. Microsoft Defender SmartScreen helps to protect devices

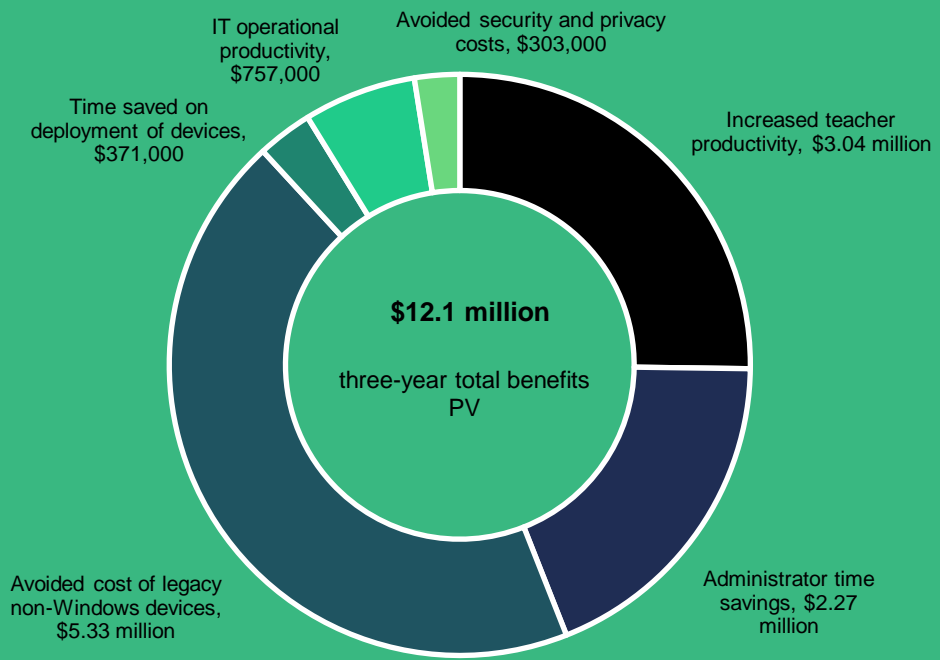
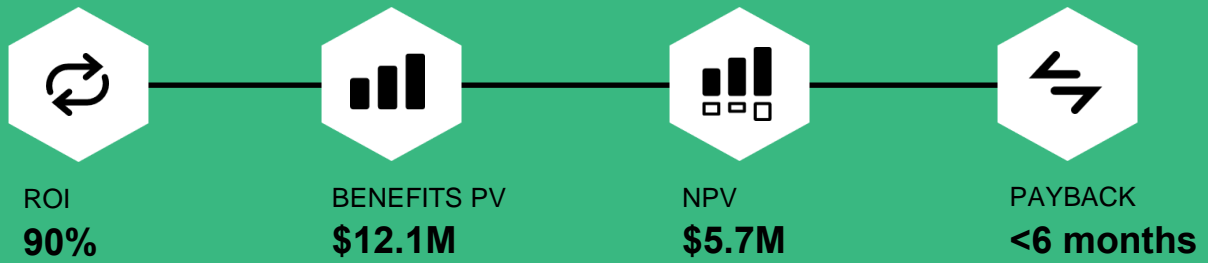
from regular phishing attacks, while reporting from Microsoft helps keep IT teams aware of potential serious threats.

**Costs.** Three-year, risk-adjusted PV costs for the composite organization include:

- **Student device costs.** The school district pays several hundred dollars for each Windows device and peripheral or replacement parts. Much of the costs are offset by avoided non-Windows device purchases.
- **Licensing and training costs.** For this analysis, the school pays for a Microsoft 365 Education A5 Security license for each staff member. IT teams spend a small amount of time familiarizing themselves with the Windows device management platform and system capabilities.

The financial analysis which is based on the interviews and survey found that a composite school district experiences benefits of \$12.1 million over three years versus costs of \$6.3 million, adding up to a net present value (NPV) of \$5.7 million and an ROI of 90%.<sup>3</sup>





**We saw that Windows laptops provided the most productivity and collaboration possibilities for our students. ... The shift to these devices happened as a result of incredible software and ability to hone on students' learning journey to achieve goals faster.**

— Chief information officer, North America

## TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews and survey, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment in Microsoft Windows Devices for K-12 education.

The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that Microsoft Windows Devices can have on a school or school district.

### DISCLOSURES

Readers should be aware of the following:

This study is commissioned by Microsoft and delivered by Forrester Consulting. It is not meant to be used as a competitive analysis.

Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the study to determine the appropriateness of an investment in Microsoft Windows Devices for K-12 education.

Microsoft reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.

Microsoft provided the customer names for the interviews but did not participate in the interviews.

Forrester fielded the double-blind survey using a third-party survey partner.



### DUE DILIGENCE

Interviewed Microsoft stakeholders and Forrester analysts to gather data relative to Microsoft Windows Devices for K-12 education.



### INTERVIEWS AND SURVEY

Interviewed nine representatives of four school districts and surveyed 171 respondents at a school or school district using Microsoft Windows devices to obtain data with respect to costs, benefits, and risks.



### COMPOSITE ORGANIZATION

Designed a composite organization based on characteristics of the interviewees and survey respondents.



### FINANCIAL MODEL FRAMEWORK

Constructed a financial model representative of the interviews and survey using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewees and survey respondents.



### CASE STUDY

Employed four fundamental elements of TEI in modeling the investment impact: benefits, costs, flexibility, and risks. Given the increasing sophistication of ROI analyses related to IT investments, Forrester's TEI methodology provides a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

# The Microsoft Windows Devices For K-12 Education Customer Journey

■ Drivers leading to the device investment.

## KEY CHALLENGES

Forrester interviewed nine representatives at four school districts across three countries and surveyed 171 respondents across 16 countries with experience leveraging Microsoft and non-Microsoft Windows devices for K-12 education. For more details on these individuals and the organizations they represent, see [Appendix B](#).

Both interviewees and survey respondents noted how their school districts struggled with common challenges before adopting Windows devices, including:

- **Low engagement and underperforming students.** The presence of learning devices did not change students' attitudes about writing or learning math and science. Even as classwork became digitized, there was not a fundamental change in the content or teaching methods to support the educational experience. Previous devices lacked accessibility features tailored to students' needs, and students became even more likely to be distracted with them during class.
- **Standardized deployment of digital devices.** Before moving toward a 1:1 device approach with their districts, interviewees' administration and teaching staff were already equipped with Windows devices. Districts purchased devices for several schools based on budgets and staff requests for devices, which meant students did not always receive a Windows device. However, decision-makers found they had to use multiple device management tools and application integrations to keep track of device statuses.
- **Limited flexibility with educational applications.** Districts also had to contend with a clash of software and compatibility. Some

schools, classes, or staff had access to Windows applications readily available within their Windows devices, while those with non-Windows devices had to leverage alternative solutions or elect to pay for Windows' applications. This difference in teaching applications made for potential disparity in educational experiences among students.

- **Poor laptop shelf life with students.** Interviewees expected devices to run into technical problems with students, yet the frequency of issues with non-Windows devices surpassed expectations. Districts saw thousands of devices require repair or altogether break during the school year. Too frequently, students' devices would fail to boot up, overheat, or not connect to the internet and interrupt learning.

**“There's been a lot of concern about the data security of other cloud services. The cloud infrastructure and the data security, is a good thing about Microsoft.”**

*Chief technology officer, Europe*

- **Privacy and security risk of data and school devices.** Decision-makers primarily entrusted data privacy and security with third-party security solutions or outside consultancies. This approach was a result of districts having to protect both Windows and non-Windows devices, as each had their own unique security features. Some districts also had their IT teams allocate free time to supporting security efforts that they recognized



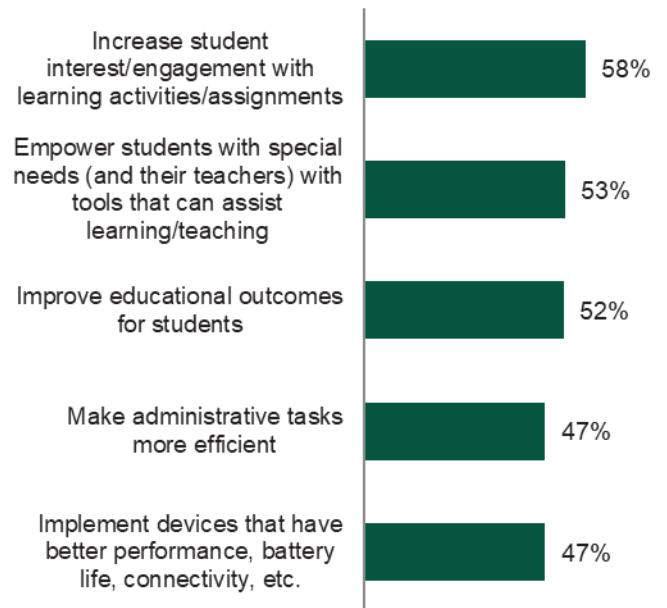
were lacking. Interviewees also felt protection policies with their non-Windows devices were limited. This was especially concerning as thousands of students' devices faced daily phishing attacks and outside threats.

### INVESTMENT OBJECTIVES

The interviewees and survey respondents elected to adopt Windows devices for their 1:1 program based on the following criteria:

- Administration and teachers were already using Windows devices. Students with Windows devices would standardize device deployment and management.
- Districts wanted to expose students to Windows applications to better prepare them for leveraging them postgraduation.
- Windows devices tools, like Immersive Reader and Math Assistant, are used to support student learning.
- Accessibility features adjusted education to meet students based on their vision, hearing, learning, mobility, and other needs.
- Transparent privacy policies and security features to protect against phishing and other attacks across thousands of devices in the district.

**“Please select the top drivers or objectives that led your organization to deploy Microsoft Windows devices. My organization of primary education sought to . . .”**



Base: 171 global school representatives  
 Note: Showing top 5 responses  
 Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, March 2023

## COMPOSITE ORGANIZATION

Based on the interviews and survey, Forrester constructed a TEI framework, a composite company, and an ROI analysis that illustrates the areas financially affected. The composite organization is representative of interviews with nine decision-makers from four school districts and 171 survey respondents, and it is used to present the aggregate financial analysis in the next section.

While the geography of the composite is US-based, the benefit improvements with Windows devices remain applicable to school districts across different regions and district types. The composite organization has the following characteristics:

**Description of composite.** The organization is a US-based public school district. It has 30,000 students across 50 school sites in the district, and students are supported by 2,000 teachers, 300 administrators (principals, vice principals, administrators, etc.), and 50 IT specialists.

**Deployment characteristics.** The school district historically had Windows devices among administration and staff, as well as in computer labs for students to use. Senior leadership elected to move to a 1:1 student program where the district provides laptops to students for learning. The school initially distributes both non-Windows and Windows laptops to students across grades 2 through 12, while staff and administration continue to use Windows devices. However, it is now opting to move toward a full 1:1 Windows device program after facing several challenges.

Schools in the district will distribute new Windows devices to 25% of its students across grades 2 through 12 each year over the course of four years as they replace their legacy laptops. District staff will continue their use of Windows devices. Administrators will use Microsoft Intune for management of all devices and districts will move on from third-party security and privacy support to Microsoft's services.

### Key Assumptions

- 30,000 students
- 50 school sites
- 1:1 laptop program
- 2,000 teachers
- 300 administrators
- 50 IT specialists

# Analysis Of Improved Student Outcomes

## ■ Qualitative student benefits

Interviewees spoke at length about greater student performance since deploying Windows devices. While they could not financially quantify the impact of this improvement, they emphasized this was the key benefit of using Windows devices, and survey respondents reiterated that point.

- **Greater student performance and engagement.** Interviewees said that student grades demonstrably improved since their organizations adopted Windows devices. The director of digital strategy at a school district in Europe said: “We’ve started to see some success in terms of improved grades from students who [previously] flunked every single exam. Now all of a sudden, they’ve got a Windows device in front of them and they’re starting to get good grades.”

The director of digital learning at a school district in North America saw a dramatic transformation in performance. Over the course of six years, schools in the district rose from the top of the bottom third to the low end of the top third in terms of student performance. To maintain their progress, the interviewee said the district succeeded by “bringing in more educational technology, accessibility tools, language tools, and reading tools driven through the Windows Teams Office 365 environment.” Teachers also tracked student activity completion to better focus on areas where engagement was flagging and how to best reengage students.

A key highlight among interviewees was Microsoft Immersive Reader’s accessibility throughout Office 365 platforms. Integrations with other Windows applications, like Teams and PowerPoint, made for consistent learning experiences for students. When teachers shared materials and classmates communicated with

each other over these applications, students could use the tool to read aloud words or use line focus to carefully review shared materials, which improved upon collaborative learning.

Beyond reading comprehension, within OneNote students could use Math Assistant to walk through equation logic or Immersive Reader to hear math steps out loud. These tools helped students to complete math problems faster and incrementally improve average test scores.

Interviewees were proud of their students’ performance and noted their Power BI-based public scorecards reflected that improvement over the years.

## VOICE OF THE CUSTOMER: STUDENT PERFORMANCE

Survey respondents identified several ways in which Windows devices helped students:

- “Students have been able to work faster and with more dedication.”
- “[Microsoft devices] boosted student confidence and improved creativity.”
- “[Microsoft devices] not only cover the essentials, but also add flair and imagination.”

- **Improved student accessibility.** Windows devices' accessibility features across native applications had the biggest impact in helping all students engage with class materials. For example, students with visual impairment were assisted by Windows OS's features like color filters for color blindness and text cursor indicators to describe images onscreen. For students with hearing impairment, Windows OS's featured live captions converted audio to text in real time. Finally, interviewees said that students for whom English is a second language used translations through Immersive Reader to help learn the language.

Interviewees believed these features took barriers away from students completing schoolwork, particularly around writing, which was always a challenge even when students were grasping lessons. For teachers, this change helped them to fully assess students' learning comprehension and communication strengths without writing being an obstacle.

Accessibility features from Windows devices extended to support mobility (e.g., eye control compatibility, voice typing), mental health (e.g., customizable notification settings), and neurodiversity (e.g., always visible scrollbars and manage image transparency and animations).

The chief information officer at a North American school district shared an example of how the technology helped, saying: "Assistive technology is very important. We have a student who is paralyzed from the neck down and wanted to use a computer. By using a laptop with a camera and employing facial recognition, the student was able to login and use the laptop. The smile on his face once he was able to login ... It was incredible and reminded my team why we come to work."

## VOICE OF THE CUSTOMER: ACCESSIBILITY

Survey respondents also spoke to the accessibility benefits of Windows devices:

- "[Windows devices provide] an enhanced learning experience by tailoring to students' specific needs."
- "With visually enhanced displays, [Windows devices] improve reading and learning procedures for students."
- "[Windows devices are] user-friendly and easy to adopt."

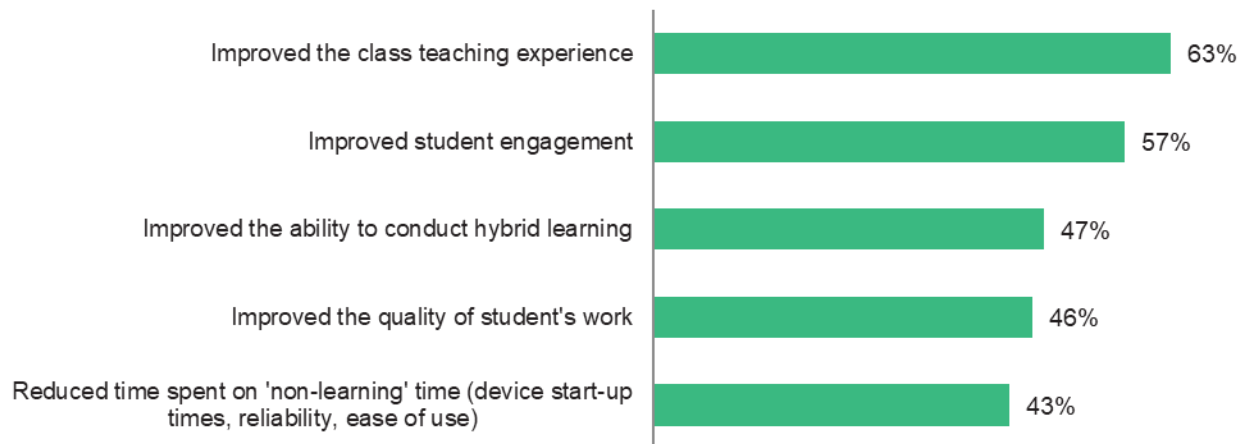
- Better student preparedness postgraduation.**  
 Interviewees recognized that introducing students to Windows devices helped to prepare them for college and beyond, where they will likely use Windows applications skills more broadly. The director of digital learning at a North American school district said: “[Windows] is just so widely used at most business that we felt kids would be the most prepared with it. Let’s prepare them to use the tools they are going to be using in the workforce.”

Interviewees at a school district in a lower income area in Europe felt that having Windows devices for students represented a rare chance to expose students to devices they would find in the workplace. The school principal said: “Anything we can do to skill them up is going to help improve their life chances later down that line, so that is what we’re going to do. ... One of the reasons we went for Microsoft was around future

skills. While children may be digitally native, they need skills in how to use [professional] technology.”

Beyond exposure to the Windows operating system and its features, interviewees’ school districts were able to add more third-party applications to support learning across different disciplines. The information and communication technology service manager in Europe said: “We have multidisciplinary learning where children can learn science and arts in the same package. Some applications that we are using, [such as] for 2D designing or vector graphics, they only work on Microsoft or Windows devices.” This support helped the district move from STEM to STEAM education with the arts (i.e., “A” for arts in STEAM) more fully integrated into digital learning.

**“Which, if any, of the following student or teacher benefits has your organization experienced from using Microsoft Windows devices?”**



Base: 72 global school teachers

Note: Showing top 5 responses

Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, March 2023



# Analysis Of Benefits

■ Quantified benefit data as applied to the composite

Total Benefits						
Ref.	Benefit	Year 1	Year 2	Year 3	Total	Present Value
Atr	Increased teacher productivity	\$631,800	\$1,263,600	\$1,895,400	\$3,790,800	\$3,042,703
Btr	Administrator time savings	\$912,600	\$912,600	\$912,600	\$2,737,800	\$2,269,501
Ctr	Avoided cost of legacy non-Windows devices	\$2,141,775	\$2,141,775	\$2,141,775	\$6,425,325	\$5,326,277
Dtr	Time saved on deployment of devices	\$149,175	\$149,175	\$149,175	\$447,525	\$370,976
Etr	IT operational productivity	\$304,200	\$304,200	\$304,200	\$912,600	\$756,500
Ftr	Avoided security and privacy costs	\$121,680	\$121,680	\$121,680	\$365,040	\$302,600
	Total benefits (risk-adjusted)	\$4,261,230	\$4,893,030	\$5,524,830	\$14,679,090	\$12,068,557

## INCREASED TEACHER PRODUCTIVITY

**Evidence and data.** According to 63% of survey respondents, Windows devices improved the class teaching experience. This was supported by interviewees voicing their appreciation for the integration of Windows applications across their services, from accessing and editing documents within OneDrive folders to collaborating on files over Microsoft Teams or Whiteboard with their class. In addition, when teachers were out sick or on leave, they could keep materials in the cloud for substitutes to follow without skipping a beat. Minutes of time was saved daily in distributing and collecting classroom materials.

Regarding improved student engagement, a key factor supporting teachers was the ability to monitor student activity over Microsoft Teams. Teachers tracked data like completion of assignments and how much time students spent on each assignment. This information helped teachers focus on areas that students were struggling with or learn how to best

help them so they wouldn't fall behind the rest of the class.

The reliability of Windows device hardware also safeguarded students against falling behind or losing learning time. Screen, audio, or Wi-Fi failures that could have interrupted learning performed reliably and kept both students and teachers on track. Interviewees estimated that Windows devices recouped teachers roughly 10 to 15 minutes each day in learning time, giving them back time to focus on more topics or lessons.

**“We are facilitating the ability of the teacher to do their job better in a world that is continually encountering more students with different sets of skills.”**

*Director of digital learning and teaching, North America*

**Modeling and assumptions.**<sup>4</sup> For the composite organization, Forrester assumes:

- With 25% of students moving to Windows devices each year, 25% of teachers see the benefits in Year 1, or 500 educators in the district. The number of teachers experiencing benefits of Windows devices increases each year as more students receive the devices across schools in the district.
- Teachers recover one hour in productivity each week of the school year.
- The fully loaded hourly rate for teachers, including benefits, is \$39.

**Risks.** Differences in that may impact how an organization experiences this benefit include:

- The number of teachers and their respective pay in the district.
- The quality of software and devices used before migrating to Windows devices.

**Results.** To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of \$3.04 million.

**“There are aspects of what devices will do in terms of personalized learning that for some children means they don’t need the same level of adult support that they might have previously required.”**  
*Director of digital strategy, Europe*

Increased Teacher Productivity					
Ref.	Metric	Source	Year 1	Year 2	Year 3
A1	Number of teachers	Composite	500	1,000	1,500
A2	Hours recovered toward learning activities per week	Interviews and survey	1	1	1
A3	Subtotal: Total number of hours recovered per year	A1*A2*36 weeks in school year	18,000	36,000	54,000
A4	Fully loaded hourly rate of teachers	TEI standard	\$39	\$39	\$39
At	Increased teacher productivity	A3*A4	\$702,000	\$1,404,000	\$2,106,000
	Risk adjustment	↓10%			
Atr	Increased Teacher productivity (risk-adjusted)		\$631,800	\$1,263,600	\$1,895,400
<b>Three-year total: \$3,790,800</b>			<b>Three-year present value: \$3,042,703</b>		

## ADMINISTRATOR TIME SAVINGS

**Evidence and data.** The reliability of Windows 11 devices meant administrators, particularly financial officers, spent less time ordering replacement devices and parts. Meanwhile, the devices' Microsoft Intune software provided administrators with a single platform of visibility to the status of deployed Windows devices and helped streamline decision-making on device purchases.

Administrators (e.g., principals, vice principals and superintendents) often spent hours on a weekly or monthly basis creating reports that compiled student performance data. This was a manual effort completed with Microsoft Excel. Insights in Microsoft Teams helped to surface student performance data within a few clicks, and data included activity levels, grades, and progress on assignments.

Monitoring of student performance was enhanced with their school district adopting Microsoft 365 Education A5 Security licenses and gaining access to Power BI to automate analysis of data.

Administrators rarely saw any errors with the platform automatically intaking data into school dashboards. The performance of Power BI made it possible for them to share interactive scorecards on a school's student performance across multiple disciplines. These up-to-date scorecards helped administrators make personnel and purchase decisions, while efficiently informing the public on a school's or district's performance.

**Modeling and assumptions.** For the composite organization, Forrester assumes:

- Each of the 300 members of administration save 75 minutes per week on work activities since adopting Windows devices.
- The fully loaded hourly rate for administrators, including benefits, is \$52.

**Risks.** Differences that may impact how an organization experiences this benefit include:

- The size of administration staff and their respective pay in the district.
- Analysis and device management tools in place prior to adopting Windows devices.

**Results.** To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$2.27 million.

**“We just recently turned on Teams Insights for the district. Teachers were already using Insights to really inform their view of how a student was doing in the class. Now it’s pulling all that data together for a district view [to better inform us].”**

**“We really utilize our Power BI license through [Microsoft 365 Education] A5. We build multiple dashboards in Power BI and have even made our school scorecards publicly accessible.”**

*Chief Information Officer, North America*

<b>Administrator Time Savings</b>					
<b>Ref.</b>	<b>Metric</b>	<b>Source</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>
B1	Number of admin staff	Interviews	300	300	300
<b>B2</b>	<b>Hours recovered toward activities per week</b>	<b>Composite</b>	<b>1.25</b>	<b>1.25</b>	<b>1.25</b>
B3	Subtotal: Total numbers of hours recovered per year	B1*B2	19,500	19,500	19,500
B4	Fully loaded hourly rate of administrator employees	TEI standard	\$52	\$52	\$52
Bt	Administrator time savings	B3*B4	\$1,014,000	\$1,014,000	\$1,014,000
	Risk adjustment	↓10%			
Btr	Administrator time savings (risk-adjusted)		\$912,600	\$912,600	\$912,600
<b>Three-year total: \$2,737,800</b>			<b>Three-year present value: \$2,269,501</b>		

## AVOIDED COST OF LEGACY NON-WINDOWS DEVICES

**Evidence and data.** Alongside no longer purchasing non-Windows devices or the alternative associated licensing costs for students, school districts recognized cost savings based on the general reliability of Windows devices. Specifically, repair costs were smaller on an annual basis and the frequency which laptops entirely broke dropped.

Districts allotted parts of their budget for repairs and replacement devices and parts because decision-makers expected devices to experience wear and tear from students. However, these costs for non-Windows devices surpassed expectations.

Interviewees shared that refresh rates for non-Windows devices were roughly three years compared to the at least four-year lifespan they reported experiencing with Windows devices.

The primary issues with prior devices were related to hardware, with devices performing sluggishly sooner than expected. One school district in Europe that supplied older students with Windows devices and heavily relied upon them in the classroom had only six devices completely break over the past year, even with all devices receiving significant wear. The school principal said: “There are so few devices, bearing in mind how much heavy use they get, that are ever broken or damaged. It’s a real rarity for us to dispose of one. ... We take the view that we use them like stationary items. They’re like pens or pencils. They’re not to be seen as something special. They take a lot of wear.”

Interviewees did cite that economic change may influence how long they would make use of devices, extending refresh rates beyond four years. However, interviewees were confident current Windows devices could remain in healthy shape for years to come.

**“We have most of our devices on a three-year refresh cycle. We may extend that to four years or even five, but here’s the good news: that doesn’t scare me with regard to a Windows device.”**

*Chief information officer, North America*

**Modeling and assumptions.** For the composite organization, Forrester assumes:

- Among the 25,500 students in grades 2 through 12 who are eligible to receive a new laptop, 25% receive a new Windows device each year. This replaces their non-Windows device, and there is a four-year refresh rate for these devices.
- The average cost of legacy non-Windows devices is \$250.
- The school district pays \$225,000 in additional repair costs per year for non-Windows devices, or roughly \$35 per device.
- The school district no longer orders 5% more replacement non-Windows devices than expected each year.
- Schools no longer pay an average annual management software cost for the non-Windows OS, which totals \$242,250.

**Risks.** Differences that may impact how an organization experiences this benefit include the number of non-Windows devices in use at schools and associated repair, replacement, or licensing costs.



**Results.** To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$5.33 million.

<b>Avoided Cost Of Legacy Non-Windows Devices</b>					
Ref.	Metric	Source	Year 1	Year 2	Year 3
C1	Number of students using a laptop per year	Composite	25,500	25,500	25,500
C2	Percentage of students receiving a new laptop each year	Composite	25%	25%	25%
C3	Average cost of non-Windows devices	Interviews	\$250	\$250	\$250
C4	Avoided cost of legacy non-Windows devices	C1*C2*C3	\$1,593,750	\$1,593,750	\$1,593,750
C5	Additional repair costs	Interviews	\$225,000	\$225,000	\$225,000
C6	Subtotal: Avoided cost of legacy non-Windows devices and repairs	C4+C5	\$1,818,750	\$1,818,750	\$1,818,750
C7	Percentage of additional laptops that were purchased to replace broken laptops	Interviews	5%	5%	5%
C8	Additional laptops previously purchased to replace broken laptops	C1*C7	1,275	1,275	1,275
C9	Subtotal: Avoided cost of replacement laptops	C8*C3	\$318,750	\$318,750	\$318,750
C10	Subtotal: Avoided management software costs	Interviews	\$242,250	\$242,250	\$242,250
Ct	Avoided cost of legacy non-Windows devices	C6+C9+C10	\$2,379,750	\$2,379,750	\$2,379,750
	Risk adjustment	↓10%			
Ctr	Avoided cost of legacy non-Windows devices (risk-adjusted)		\$2,141,775	\$2,141,775	\$2,141,775
<b>Three-year total: \$6,425,325</b>			<b>Three-year present value: \$5,326,277</b>		

## TIME SAVED ON DEPLOYMENT OF DEVICES

**Evidence and data.** Windows devices had a streamlined setup with Microsoft Autopilot’s autoenroll capabilities that automated the initial device registration process. Then IT employees managed all of the devices and input security and system settings across them all at once through Microsoft Intune. These tools eliminated the need for manual configuration and reduced the time spent setting up individual devices.

IT teams could simply connect the devices to the network and the tools automated the rest of the setup process. This approach helped IT teams support bulk device deployments and streamline deployment at a large scale. Interviewees said their organizations also felt encouraged to expand deployment size due to the ease with which they could register and manage devices.

In addition, districts let students hold on to devices for longer than three years due to the longevity of reliable device performance. The devices were returned to students at the beginning of each school year, which helped IT teams spend less time reimaging devices each summer.

**Modeling and assumptions.** For the composite organization, Forrester assumes:

- Each year, 25% of students in the school district receive new Windows devices.
- Deployment of devices takes half an hour less with autoenroll than previous solutions.
- The fully loaded hourly rate for IT employees, including benefits, is \$52.

**Risks.** Differences that may impact how an organization experiences this benefit include:

- Deployment speed may vary based on existing systems, software, or network infrastructure in place and their compatibility with Windows.

- IT team size variations; without proper planning and resources for device lifecycle management, there is a risk of devices becoming outdated over time.

**Results.** To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$371,000.

**“We have recently begun taking advantage of Microsoft Intune. ... We can almost take the devices out of the box and hand them to the end user. The days of technicians spending months imaging devices are over.”**

*Chief technology officer, North America*

<b>Time Saved On Deployment Of Devices</b>					
Ref.	Metric	Source	Year 1	Year 2	Year 3
D1	Number of new devices each year	Composite number of students*25% receiving new device each year	6,375	6,375	6,375
<b>D2</b>	<b>Hours saved setting up devices</b>	<b>Interviews and survey</b>	<b>0.50</b>	<b>0.50</b>	<b>0.50</b>
D3	Subtotal: Hours saved annually setting up devices	D1*D2	3,188	3,188	3,188
D4	Fully loaded hourly rate of IT employees	TEI standard	\$52	\$52	\$52
Dt	Time saved on deployment of devices	D3*D4	\$165,750	\$165,750	\$165,750
	Risk adjustment	↓10%			
Dtr	Time saved on deployment of devices (risk-adjusted)		\$149,175	\$149,175	\$149,175
<b>Three-year total: \$447,525</b>			<b>Three-year present value: \$370,976</b>		

### IT OPERATIONAL PRODUCTIVITY

**Evidence and data.** As much as deployment work was streamlined for IT, the scale of the 1:1 program generated significant support requests for IT teams. Workers contended with daily help desk requests for device repairs, support for application access, and system performance issues. IT teams were able to mitigate these challenges with the support of Windows devices and the operating system.

Specifically, automatic enrollment of Windows devices to Microsoft Autopilot and Intune helped IT ensure that all devices had the same settings and applications. Device automatic enrollment also minimized ad hoc requests for access to features and services.

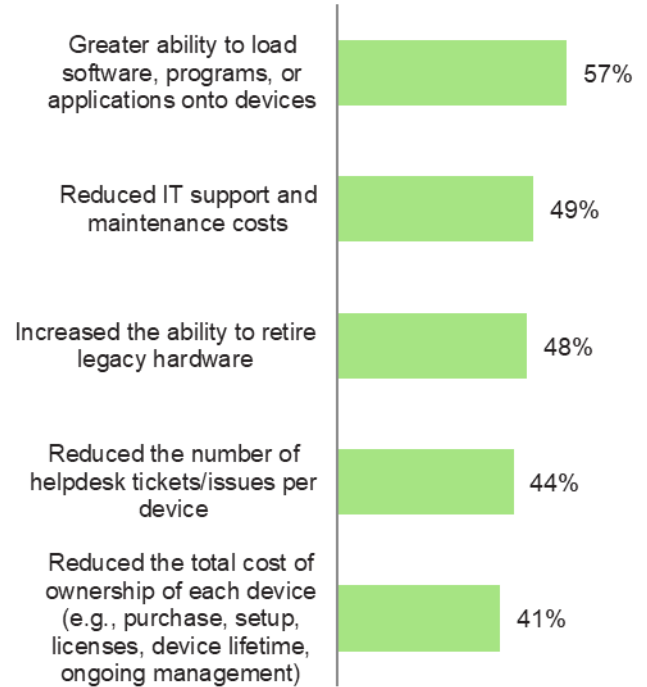
Control over a standardized set of devices helped IT to eliminate technical issues faster. The chief information officer of a North American school district gave an example where a piece of software installed on a small subset of devices had pop up notifications that logged students out of testing sessions. The IT staff logged this irregularity and immediately removed the software from all devices with Microsoft Intune, which saved the team the time staff would have spent collecting devices and manually removing the software.

Interviewees also shared that Microsoft Teams and the ability to interactively share device screens meant that IT didn't have to remotely share desktops and guide users through applying fixes. As a result, IT avoided steps like enabling remote desktop, confirming access with the user, and setting up a firewall. Given the daily occurrence of help desk requests, this incremental improvement added up to a meaningful amount of time savings.

While Windows devices experienced typical wear and tear with students, interviewees said their IT teams were able to reallocate time saved toward repair work. Whereas IT teams might have previously let devices continue to be used with lingering issues, they could now deal with device problems before they

got worse. In addition, districts began tracking recurring device problems with Power BI. They could then order parts accordingly to prepare for fixes before they were needed, further streamlining IT operations.

**“Which, if any, of the following IT benefits has your organization experienced from using Microsoft Windows devices?”**



Base: 61 global school IT representatives  
 Note: Showing top 5 responses  
 Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, March 2023

**Modeling and assumptions.** For the composite organization, Forrester assumes:

- There are 50 IT employees across the district, and they improve on time spent with device maintenance repairs by 2 hours each week.
- IT employees also avoid half an hour of work each week when dealing with help desk requests (e.g., login support, application access, software updates).

**Risks.** Differences that may impact how an organization experiences this benefit include:

- The size of the IT team and the staff hourly rate.
- Prior devices in school district and their frequency and severity of issues.

**“We put together a Power BI analysis based on data that we were capturing on the student level for break fix. Based on that, we know going into the school year these are parts that break most frequently and purchase around that.”**

*Chief technology officer, North America*

**Results.** To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$757,000.

IT Operational Productivity					
Ref.	Metric	Source	Year 1	Year 2	Year 3
E1	Number of IT FTEs required to manage legacy devices	Composite	50	50	50
E2	<b>Improvement in maintenance and repair of devices per week (hours)</b>	<b>Survey</b>	<b>2</b>	<b>2</b>	<b>2</b>
E3	Time saved since adopting Microsoft Windows devices	E1*52*E2	5,200	5,200	5,200
E4	Hourly rate of IT employees	TEI standard	\$52	\$52	\$52
E5	Subtotal: Value of time saved on maintenance and repairing devices	E3*E4	\$270,400	\$270,400	\$270,400
E6	<b>Time saved on addressing help desk requests per week (hours)</b>	<b>Survey</b>	<b>0.50</b>	<b>0.50</b>	<b>0.50</b>
E7	Total time saved on help desk requests	E1*E6*52 weeks	1,300	1,300	1,300
E8	Subtotal: Value from reduced help desk requests	E7*E4	\$67,600	\$67,600	\$67,600
Et	IT operational productivity	E5+E8	\$338,000	\$338,000	\$338,000
	Risk adjustment	↓10%			
Etr	IT operational productivity (risk-adjusted)		\$304,200	\$304,200	\$304,200
<b>Three-year total: \$912,600</b>			<b>Three-year present value: \$756,500</b>		



### AVOIDED SECURITY AND PRIVACY COSTS

**Evidence and data.** Interviewees’ school districts relied on Microsoft Defender SmartScreen to protect against regular phishing attacks. Microsoft’s reporting on attacks helped the organizations monitor the types of threats they were facing, score their cybersecurity posture, and identify areas of risk at schools in their district. Additionally, about two-thirds of surveyed global school security and compliance representatives saw improved security management and security posture after changing to Microsoft Windows devices. Among those respondents, key factors contributing to improvement included improved ability to detect threats and recover from threats.

Interviewees’ districts had yet to experience a successful attack or see one escalate to a level to be taken seriously at the time of their interview. IT teams regularly pushed security updates to the entirety of their devices through Microsoft Intune to ensure their protection. The protected devices included any remaining non-Windows devices at schools.

Districts that had employed third-party agencies or multiple security solutions were able to offload those costs once they moved entirely to Windows devices. Schools that had IT employees supporting security and privacy efforts spent less time collecting and

analyzing reports on the security of devices with Microsoft, freeing them to handle other technical work.

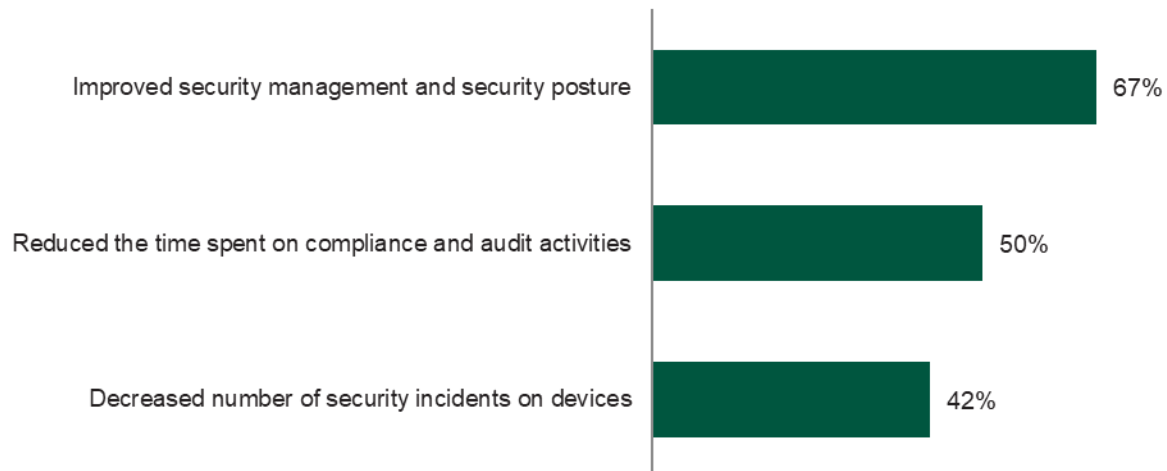
**Modeling and assumptions.** For the composite organization, Forrester assumes:

- The full-time equivalent of 10 employees (i.e., the cumulative effort of multiple employees) support security efforts in the district.
- All together, employees supporting security efforts recognize 5 hours in time saved each week.
- The fully loaded hourly rate of security employees is the same as IT employees, or \$52 an hour.

**Risks.** Differences that may impact how an organization experiences this benefit include the number of employees that support security efforts and whether support previously involved third-party services.

**Results.** To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$302,600.

**“Which, if any, of the following security and compliance benefits has your organization experienced from using Microsoft Windows devices?”**



Base: 48 global school security and compliance representatives  
 Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, March 2023

Avoided Security and Privacy Costs					
Ref.	Metric	Source	Year 1	Year 2	Year 3
F1	FTEs supporting security and privacy efforts	Interviews	10	10	10
F2	Number of hours saved per week	Survey	5	5	5
F3	Total number of hours saved	D1*D2	2,600	2,600	2,600
F4	Fully loaded hourly rate of employees supporting security and privacy efforts	TEI standard	\$52	\$52	\$52
Ft	Avoided security and privacy costs	C1*C2*C3	\$135,200	\$135,200	\$135,200
	Risk adjustment	↓10%			
Ftr	Avoided security and privacy costs (risk-adjusted)		\$121,680	\$121,680	\$121,680
Three-year total: \$365,040			Three-year present value: \$302,600		

**“We applied Microsoft Defender to improve device security, specifically for features protecting mail with Outlook and data security of files in use on OneDrive. ... The cloud infrastructure and data security are the most important.”**

*Chief technology officer, Europe*

**“Security was very much a factor in choosing an [Education] A5 license with Microsoft. We leaned into everything from Defender to Intune to Microsoft Cloud App Security. ... Our team is able to identify any kind of threat, contain it, and eradicate it.”**

*Chief information officer, North America*

## FLEXIBILITY

The value of flexibility is unique to each organization. There are multiple scenarios in which an organization might implement Microsoft Windows devices and later realize additional uses and business opportunities, including:

- **Improved employee experience.** Interviewees reported that teachers felt like they were able to better communicate with students and follow up on asks and homework over Teams. This proved especially helpful when students were out sick and teachers could deliver documents straight to their devices or guide them in SharePoint. Similarly, teachers could see more easily what colleagues taught incoming students and see how other instructors in the same district covered lessons. While teachers had done this previously, the accessibility of Teams and the ease with which they could look up colleagues made it simpler.

School teachers also saved specific plans and materials to OneNote, which helped them avoid falling behind on lesson plans. These improvements contributed to positive teacher sentiment. According to survey results, 32% of global teacher respondents saw improved teacher retention in their districts.

- **Resell value of Windows device.** Some school districts purchased Windows devices and factored their potential resell value into the total costs. This resale value helped make the case for some decision-makers to move forward with the investment. Other school districts had devices supplied by the state and didn't consider resale in their decision-making.

Flexibility would also be quantified when evaluated as part of a specific project (described in more detail in [Appendix A](#)).

**“I believe that communication and collaboration directly impact the retention rates that we are seeing. You’ve got one pane of glass through which a teacher can communicate with every other third grade teacher across the district.”**

*Chief technology officer, North America*

**32%**

Of global teacher respondents saw improved teacher retention since adding Windows devices



**“We definitely do [see resell value]. In the larger picture that’s part of the story, but the big part of the story is productivity and collaboration with students.”**

*Chief information officer, North America*

# Analysis Of Costs

■ Quantified cost data as applied to the composite

Total Costs							
Ref.	Cost	Initial	Year 1	Year 2	Year 3	Total	Present Value
Gtr	Student device costs	\$0	\$2,218,125	\$2,218,125	\$2,218,125	\$6,654,375	\$5,516,149
Htr	Licensing and training costs	\$43,680	\$315,000	\$315,000	\$315,000	\$988,680	\$827,038
	Total costs (risk adjusted)	\$43,680	\$2,533,125	\$2,533,125	\$2,533,125	\$7,643,055	\$6,343,187

## STUDENT DEVICE COSTS

**Evidence and data.** Interviewees reported that their school districts gradually introduced Windows devices to students each year across groupings of grades (e.g., grades 9 through 12 as a group). Devices had a three-to-four-year refresh rate with approximately 25% of devices being replaced each year.

To protect the longevity of devices, districts purchased replacement parts and peripherals like headphones, mice, and protectors. While the listing price of the Windows devices were incrementally more than previous devices purchased, the repair and replacement costs were lower.

**Modeling and assumptions.** For the composite organization, Forrester assumes:

- Students in grades 2 through 12 will receive Windows devices. The rate at which they are received is 25% of students each year.
- The districts purchase different Windows devices, including laptops and laptops with touchscreens, the average cost of these devices is \$300.
- Teachers have Windows devices from before the district moved to a 1:1 program, so the composite does not incur additional costs.

- The average annual investment in device peripherals and replacement parts totals \$200,000.

**Risks.** Differences that may impact how an organization experiences this cost include:

- The number of students in the school district and speed with which devices are distributed.
- The average cost of devices, peripherals, and replacement parts.

**Results.** To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of \$5.5 million.

<b>Student Device Costs</b>						
<b>Ref.</b>	<b>Metric</b>	<b>Source</b>	<b>Initial</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>
G1	Number of students using laptops per year	Composite		25,500	25,500	25,500
G2	Percentage of students receiving a new laptop each year	Composite		25%	25%	25%
G3	Cost per laptop	Interviews		\$300	\$300	\$300
G4	Subtotal: Windows laptop device costs	G1*G2*G3		\$1,912,500	\$1,912,500	\$1,912,500
G5	Annual investment in device peripherals and replacement parts	Interviews		\$200,000	\$200,000	\$200,000
Gt	Student device costs	G4+G5	\$0	\$2,112,500	\$2,112,500	\$2,112,500
	Risk adjustment	↑ 5%				
Gtr	Student device costs (risk-adjusted)		\$0	\$2,218,125	\$2,218,125	\$2,218,125
<b>Three-year total: \$6,654,375</b>			<b>Three-year present value: \$5,516,149</b>			



**LICENSING AND TRAINING COSTS**

**Evidence and data.** To provide a complete picture on the benefits of Windows for Education, interviewees in this study were from school districts that paid for Microsoft 365 Education A5 Security licenses and made use of its advanced security and compliance features. Microsoft 365 Education A3 Security licenses are available at a lower rate for school districts as well, which includes the core app, management, and security features.

A small amount of time was taken by IT employees in the interviewees’ school districts to train themselves on the management software’s features and settings.

**Modeling and assumptions.** For the composite organization, Forrester assumes:

- The district pays its A5 licensing fee based on the number of faculty members, and this totals \$300,000.

- In the initial period, 50 IT employees spend a total of two days and 16 hours to learn how to manage Windows devices and support the district.
- The hourly rate for IT employees is \$52.

**Risks.** Differences that may impact how an organization experiences this cost include:

- The size of a school district’s faculty.
- If a school elects for an A3 or A5 license.
- The number of IT members who have to learn how to manage Windows devices and the time spent on learning.

**Results.** To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV of \$827,000.

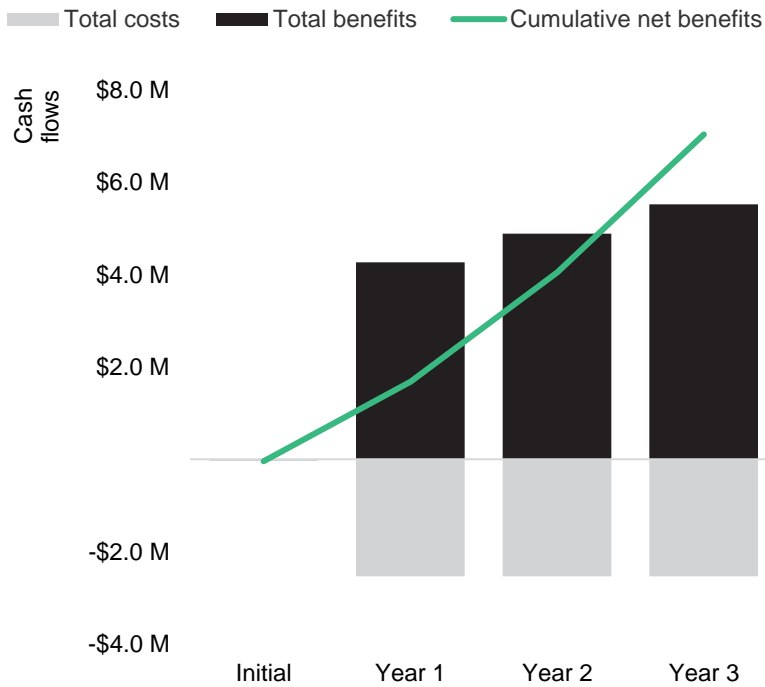
Licensing And Training Costs						
Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
H1	Annual licensing cost	Interviews		\$300,000	\$300,000	\$300,000
H2	IT FTEs training on Windows operating system	Composite	50			
H3	Hours spent training IT on Windows	Interviews	16			
H4	Average fully burdened hourly rate of IT staff	TEI standard	\$52			
H5	Subtotal: Training costs	H2*H3*H4	\$41,600			
Ht	Licensing and training costs	H1+H5	\$41,600	\$300,000	\$300,000	\$300,000
	Risk adjustment	↑ 5%				
Htr	Licensing and training costs (risk-adjusted)		\$43,680	\$315,000	\$315,000	\$315,000
<b>Three-year total: \$988,680</b>			<b>Three-year present value: \$827,038</b>			

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# Financial Summary

## CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

### Cash Flow Chart (Risk-Adjusted)



The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

**These risk-adjusted ROI, NPV, and payback period values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit and Cost section.**

### Cash Flow Analysis (Risk-Adjusted Estimates)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	(\$43,680)	(\$2,533,125)	(\$2,533,125)	(\$2,533,125)	(\$7,643,055)	(\$6,343,187)
Total benefits	\$0	\$4,261,230	\$4,893,030	\$5,524,830	\$14,679,090	\$12,068,557
Net benefits	(\$43,680)	\$1,728,105	\$2,359,905	\$2,991,705	\$7,036,035	\$5,725,370
ROI						90%
Payback						<6 months

## Appendix A: Total Economic Impact

Total Economic Impact is a methodology developed by Forrester Research that enhances an organization's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

### TOTAL ECONOMIC IMPACT APPROACH

**Benefits** represent the value delivered to the business by the product. The TEI methodology places equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization.

**Costs** consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.

**Flexibility** represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.

**Risks** measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.



### PRESENT VALUE (PV)

The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.



### NET PRESENT VALUE (NPV)

The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.



### RETURN ON INVESTMENT (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.



### DISCOUNT RATE

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.



### PAYBACK PERIOD

The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

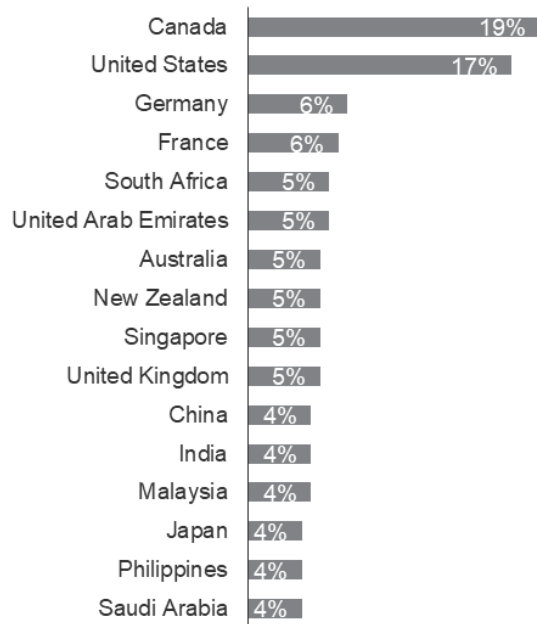
# Appendix B: Interview And Survey Demographics

## Interviews

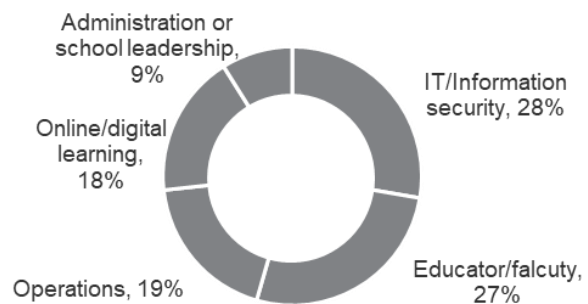
· Chief technology officer · Information and communication technology manager	Europe	22,000 students across 46 schools	5,000+ employees
· Director of digital strategy · Deputy chief executive · Principal	Europe	20,000 students across 37 schools	3,000+ employees
Chief information officer	North America	90,000 students across 100 schools	14,000+ employees
· Chief technology officer · Director of digital learning and teaching · Coordinator of digital learning and teaching	North America	28,000 students across 42 schools	4,000+ employees

## Survey Demographics

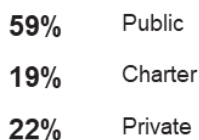
“In which country are you located?”



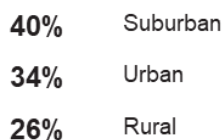
“Which of the following describes your current role?”



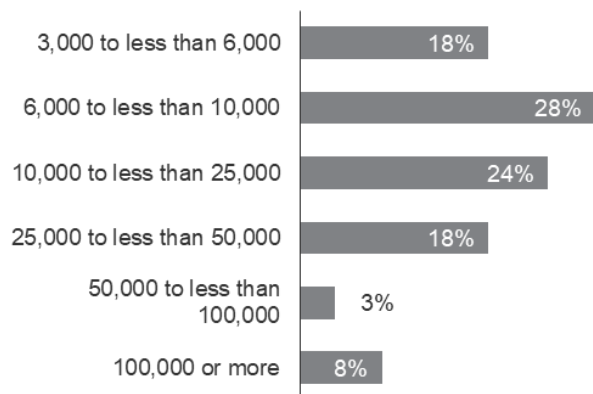
“What is your educational organization?”



“Which of the following best describes the location of your educational organization?”



“Using your best estimate, please indicate the number of students who attend schools in your district.”



Base: 171 global school representatives

Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, March 2023

## Appendix C: Endnotes

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<sup>1</sup> Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

<sup>2</sup> A 1:1 device program means that each student within a school district receives one laptop device to use across classes and at home over the course of the school year.

<sup>3</sup> Any return on investment above 0% represents a positive result from an investment. For this study, the ROI is 90%, which means that for any single dollar spent toward the investment, a school district receives \$1.90 in return. The first dollar covers the cost, leaving a \$0.90 remainder, or 90% ROI.

<sup>4</sup> The source columns in the financial model tables highlight the reference for math carried out in the analysis. At the bottom of the table, in row At, the "t" means total. For row Atr, the "tr" means total risk-adjusted.

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