Exploring Digital Transformation in Microsoft Showcase Schools

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Abstract

We are now in the exciting era of digital transformation, a time where we rethink how technology can be incorporated into all areas of business and fundamentally change existing processes. Schools are no exception to this, despite a natural apprehension about technological progress that was pushed onto schools overnight as a result of the COVID-19 pandemic. In this paper, I look to determine the definition, implications, and supports required for digital transformation in an educational setting. Through the exploration of five Microsoft Showcase Schools in the United Kingdom, I conclude that digital transformation is not a destination—but a journey—to maximize student success via individualized learning and that it requires a clear vision and structural support from the administration.

Executive Summary

Digital transformation in the education industry requires a fundamental examination and rethinking of how technology can be used in classroom settings. In this thesis, I explored five different schools who earned the Microsoft Showcase School designation, meaning that they are deemed the cream of the crop users of Microsoft's tools in education.

Microsoft Showcase Schools are Microsoft-designated schools that use their products in a transformative way. In short, Microsoft Showcase Schools "create student-centered, immersive, and inclusive experiences that inspire lifelong learning, stimulating development of essential future-ready skills so students are empowered to achieve more" (Microsoft Showcase Schools, 2023).

Five schools participated in the study: three public primary schools and two private and boarding secondary schools. These schools were picked from the Microsoft Showcase School world guide because of their shared area of excellence, as labeled by Microsoft, in "transformational leadership." I chose schools in the United Kingdom because of the affordability and feasibility of traveling between them, unlike in the U.S. where interstate travel requires much more time and expense.

There are three methods to this research study: observations, interviews, and surveys. This first method of my research is essential—seeing technologies in action in the classroom is the main purpose of this study. I wanted to see how teachers implement the technologies, and in turn, how students use Microsoft technologies to stay on the cutting edge. The second piece of the study is interviews, I arranged one-on-one interviews with faculty, staff, and administrators who use the technology, asking questions relating to their position as teachers/administrators and their relationship with the technologies and Microsoft. For the final piece of my research, I gave

anonymized Microsoft Forms surveys to students that ask short-answer questions related to their experiences using technologies in the classroom. Recruitment and who participated in each aspect of the research was at the complete discretion of the school—to make this standardized was not feasible due to the different sizes of the schools and the number of teachers and students. Overall, there were 268 student survey participants, 46 teacher/staff survey participants, 12 interview participants, and I sat in on 25 different teachers' classes.

As expected, the technology used in the school was the same: they all used the Microsoft Office 365 suite in daily practice. Microsoft OneNote, a notetaking software, and Microsoft Teams, a communication platform and collaboration hub, were by far the most used and most enjoyed of the Microsoft software. The hardware was a different story. While some schools used Microsoft's branded 2-in-1 tablet/laptop device, the Surface, not all schools used just one machine or stuck to one brand. Some schools used HP laptops and others Dell; one school used, perhaps counterintuitively, Apple iPads exclusively. To be a Microsoft Showcase School is, yes, about using Microsoft tools to better the student learning experience, but also to develop a new mindset about modifying learning experiences for the 21st century.

Through my data collection, I learned that digital transformation is, more than anything, a journey and not a destination. It is more of a mindset than something to achieve. I was fascinated to learn why the schools jumped on board with digital transformation and found that the reasons were in line with the core learning principles that Microsoft championed, from future-ready skills to individualized learning. Each school saw the power that the technology they put in their classroom brings, so much so that they look to enthusiastically share their experience with other Showcase Schools, prospective Showcase Schools, and outsiders like me.

Digital transformation is significant to 21st-century learning. Technology is making things possible today that were simply never possible yesterday. Through a variety of tools, including Minecraft Education in one example, students are not taught to memorize content but rather how to be stronger and more independent, self-aware learners.

Digital transformation in education, as defined by this research, is a mindset that requires structural, unwavering support from the administration to use technological tools, not just for the sake of it, but for creating an atmosphere of learning and individualized growth to maximize student success.

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Preface

The purpose of this preface is in part to clarify the point of the work and my topic but is also in part introspective.

I have always loved technology and was absolutely captivated by it in school. I loved more than anything when we would be able to go to the computer lab in elementary school—I was simply mystified by the endless capabilities of the twenty or so machines that sat in that classroom. I carried this love of technology through the COVID-19 pandemic, when, as part of the high school Class of 2020, our school year was cut short and was moved online overnight in March 2020. Despite not being in class with my friends, I made light of the situation and found myself growing quite comfortable with Microsoft Teams and OneNote—the very tools I analyze in this paper—becoming very interested and aware of the implications of their capabilities in education. It was during school lectures presented during COVID-19 that I realized that, armed with an internet connection and an internet-capable device, learning can take place anywhere.

Throughout my college career, I did my best to turn my passions into academic interests. I was fortunate that I could combine my passions here at Syracuse University, where I majored in selected studies in education (with a focus in education, technology and media) and music. This non-teacher preparation program allowed me ultimate flexibility in coursework. This is where I was able to blend my passion for technology into my studies, where I took a variety of information technology coursework ranging from computer networking to project management. The selected studies in education major focuses on educational transformation: I became enamored with how technology can be used to transform education. Calling on my experiences as a student through COVID-19 in both high school and college, using the technology fueled my desire to learn about how it can fundamentally reinvent education.

Given what I knew and appreciated about the Microsoft suite in education, I decided that it would be the perfect starting point to learn about digital transformation in education, especially given their Showcase School network and rubric to assess schools on their technology integration journey through the lens of educational transformation.

Acknowledgments

First and foremost, I must thank my research participants and hosts. Without you, this project would have not been possible. I want to thank Victoria Redhead, principal of Bishop Creighton Academy; Helen Evemy, headteacher of Richmond Academy; Andrew Dax, head of digital strategy at Queen Anne's School; David McClymont, director of digital delivery and innovation at Downe House School; and Tim Clarke, headteacher of Cornerstone Primary. These hosts' willingness to have me and their utmost flexibility made this project not only possible, but successful.

To Professor Michael Fudge and Dr. Jing Lei, my thesis advisor and thesis reader respectively, I thank you for your flexibility and dedication to my success, especially when the entire thesis was performed—data collection and analysis—during the summer, outside the standard academic year!

To Adam Crowley and Dr. Karen Hall, advisors of the Renée Crown University Honors program, I thank you for your belief in me to make the process happen on a magnificently short timeline and for cheering me on along the way with hints and, most importantly, a calendar with deadlines for organization.

I thank the Renée Crown University Honors program and the Center for Fellowship & Scholarship Advising for the funding to make this project happen and for help with my very first—and successful—funding proposal. I also thank the Syracuse University Office of Research Integrity and Protections for promptly answering all my questions and for dealing with me through multiple rounds of revisions given my tight deadlines.

And finally, to my support system. Thank you to my friends and family for allowing me to lean on you throughout this process, from inception to completion. And most importantly, a huge thank you to my absolute best friend, Madison Wallace, for the motivation to keep going. Through hours and hours of work, you were my strongest support system and heard, by far, the most hourly status updates.

Advice to Future Honors Students

Throughout my time working on the project, I have collected some thoughts that I would like to share with future Honors students. When it comes to the Honors thesis, it seems daunting. Never in any of my coursework have I needed to submit a 50-page paper *and* do my own data collection. I understand the feeling of starting with a blank page and having no ideas flowing. Getting started is the hardest part; no doubt about it. Once you have a topic and even a sentence of a proposal, you'll be off to the races through to the completion of the project.

1. Firstly, and above all, choose a topic you care about and that excites you. Do something you love. Something that you can talk about all day and never get tired of. There is no reason to do an Honors thesis and put in all the hours of work into something that you don't really care about!
2. Think outside the box—your thesis can be anything you want it to be and no topic is off limits. If you choose a topic that is exciting to you, there is a good chance your thesis project will be *fun* and it won't feel like just another assignment.
3. That said, apply for funding. As an Honors student, you have access to a special fund that might allow you to go anywhere in the world or do anything imaginable. Honors students have remarkably high rates of getting funded, so make sure you are one of them! Have as many pairs of eyes read over your application as possible, including your Honors advisor, thesis advisor, and someone from the SU Center for Fellowship & Scholarship Advising (CFSA).
4. Be organized. I cannot speak to this one enough. Keep to-do lists, organize your email inbox to make sure you don't miss a thing (especially if you are working with participants outside SU), create a folder in your email for messages related to your Honors thesis, mark dates on a calendar, divvy up the work so you are doing roughly the same amount on a daily or weekly basis, etc. I don't mean to brag when I say I never felt stressed about the workload of this project because I balanced the work over a set schedule and I followed it!
5. Find an advisor whose research interests match yours. Read all the faculty biographies on your individual college's website. Do not be afraid to reach out to a professor you have never met! In my case, I ventured outside my home college, the School of Education, and found a thesis advisor whom I believed was a perfect match with my research interests in another college. Take the time to find the right person for your project!
6. Have so much fun! Back to Tip #1, do what you love. Make your topic meaningful to your goals and values; it will feel all the more special and worthwhile and the paper will write itself!

Good luck!

Introduction

We are now in an age of digital transformation, a time where we rethink how technology can be incorporated into all areas of business and where we fundamentally change existing processes. This era comes after digitalization, a movement from paper and physical data to the computer.

Schools in the United States seem to have adjusted to digitalization. I am a digital native: when I was entering elementary school, all the school records were already on the computer. Teachers entered grades and took attendance online, my report cards were downloadable from my school's student information system, and my parents reloaded my school lunch money account through an app on their phones. In terms of the usage of technology in a classroom setting, we were limited to our once- or twice-weekly hour in the computer lab.

As I grew up and made my way through my K-12 school years, digital transformation began to rear its head. Around the country, schools adopted technology as fundamental pieces of the classroom. In many cases, schools began to provide low-cost electronic devices to students for use in and out of the classroom (Gutterman, 2023). For over a decade, technology giants like Microsoft and Google have pioneered in the education technology market, taking advantage of the digital transformation era to implement a 1:1 system with the goal of putting a device in the hands of every student.

Now, with many students around the world holding a device of their own, we face digital transformation head-on: it is time for teachers to rethink everything about classroom processes and learning to take advantage of the infinitely powerful tools in their students' hands. Now that the students have these devices, what is it, exactly, that we can do with them?

This question was only just starting to become answered in 2020 when COVID-19 shuttered classroom doors across the world. Suddenly overnight, the technological acuity of teachers and students was tested. The disruption to daily educational activities accelerated the usage of technology in schools and brought into the spotlight ways for improvement and change. It was now time for *everybody*, regardless of the technological ability of the teachers and students, the economic status of the surrounding area, the size of the school, etc. to embrace these tools.

As we transition out of the pandemic, it is now time—more than ever—to reimagine education with the use of technology to create an agile, innovative, and future-focused learning system (Fullan et al., 2020, p. 3). The goal of this thesis is to explore what it means to create and foster an agile, innovative, and future-focused learning system. As I stated earlier, this goes beyond digitalization—moving what were previously paper processes to the computer for ease of access and organization—into an age of full-on digital transformation.

Digital transformation is one of the buzzwords of technology academic discourse in 2023, and rightfully so. It is a future-focused term that encompasses the reevaluation of technologies in every aspect of the enterprise, down to everyday mundane actions. What this means for schools, of course, is different than what it would mean for a private-sector business.

In looking at how to effectively incorporate digital transformation in schools, Dr. Ruben Puentedura's Substitution, Augmentation, Modification, and Redefinition model effectively illustrates the breakdown of technology integration in schools (Puentedura, 2006). The SAMR model is ladder-based, representing a system in

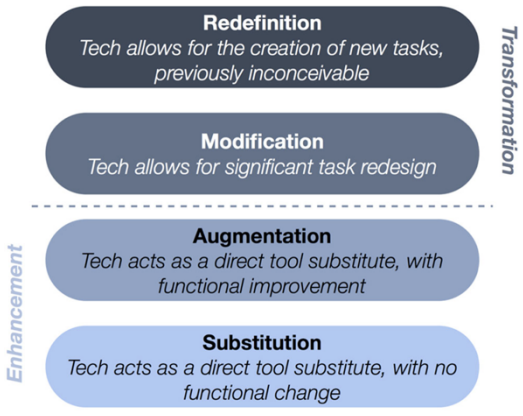

Figure 1: Hamilton et al.

which teachers can evaluate their use of technology, encouraging teachers to "move up" from lower to higher levels of technology teaching and integration (Hamilton et al., 2016, p. 434). Applying this model to my own experiences and reflecting on my own time as a student in the K-12 years, teachers were focused above all else on the substitution and augmentation pieces of the model, Puentedura refers to it as "enhancement." As Figure 1 shows, substitution, the lowest level in the model, is technology acting as a direct tool substitute with no functional change. This is not an effective strategy for technology implementation, as it symbolizes the use of technology just for the sake of it. An example could be taking a quiz online versus on pen and paper. Anecdotally, I can say that substitution was never what fueled technology integration in my schools, but rather the next rung of the ladder, augmentation. While augmentation still relies on the technology substituting for an analog tool, it introduces the idea that lends itself to transformation, that technology can produce experiences that analog tools cannot.

This research lies in the "transformation" portion of the model, representative of the upper two rungs of the ladder: modification and redefinition. Modification, as the name implies, requires a significant redesign of a task where technology becomes a central component—essential—to that activity. This research calls into question the highest rung of the SAMR model ladder: redefinition. Redefinition is the core of digital transformation, showing that technology allows for the creation of new tasks that were previously inconceivable (Puentedura, 2006).

With the SAMR model in mind, for this Honors thesis, I wanted to explore schools that were excelling in digital transformation, those who were the models for the redefinition of education technology. Identifying these schools proved easy with today's networks of education technology professionals who showcase their school's digital transformation journey.

It became quickly apparent in site research that Microsoft and Google are the main

players in school technology in the U.S. For the sake of the thesis, it proved most beneficial to keep the company from which the schools' infrastructure is built—the control variable—consistent. I will discuss the brief differences between the platforms.

For the longest time, Google ruled the educational technology market in the West. Google is best known for their easy-to-use Google Workspace for Education suite with simple interfaces across their web-based suite, inclusive of Google Docs, Sheets, and Slides, with Google Classroom serving as a primary tool for the learning management system (LMS). Their web-based applications were easy to use and required next-to-no learning curve. A major benefit to the Google ecosystem for schools was the Chromebook: an extremely cost-effective laptop that schools could buy in large quantities for student use, easily becoming 1:1. Chromebooks do not require any major processing power since ChromeOS, the device's operating system, is entirely web-based. There is no need for large local (on-device) storage since everything is stored in the cloud, and no need for anything stronger than the lowest-quality processor because everything the computer does is on the web and not on downloaded programs. The cost-effective Chromebooks' seamless integration with Google Workspace for Education, along with no learner's curve or need for software updates, makes Google hard to beat in the education market.

Microsoft, the other majority shareholder in school technology, is perhaps better known for their enterprise applications, inclusive of Windows 11 and Microsoft 365 suite, that have been adapted for educational uses. Fully-fledged versions of Microsoft Word, Excel, and PowerPoint are used by the schools. The program Microsoft Teams serves as a school collaboration hub. In comparison to Google's Chromebook, schools can use any Windows device, though Microsoft advertises and sells its Surface devices. The caveat to these devices is that these aluminum-cased 2-in-1 laptop/tablets are often much more expensive up front than the

Chromebook (it is important to note that Surfaces typically last much longer and end up being the most cost-effective choice in the long run due to longer refresh cycles and less maintenance required). A benefit to Surfaces (and other Windows-based laptops) for school use is that they are by no means simplified: they offer the full operating system that one would come to expect from a Windows device. Another unbeatable win for Microsoft is the global presence they have in the work world: as of 2017, at least 82% of enterprises worldwide use the Microsoft Office suite, and that number does not even take into account the as-a-service Microsoft 365 that does not require an on-premises solution (Spiceworks, 2017). It is for these reasons that I believe Microsoft solutions for schools create the most prepared future-ready students and why I have chosen their software as the focus of my research.

As previously mentioned, Microsoft, a global technology superpower, is one of the main players in school and enterprise technology and has excelled in designing and pushing out educational technologies in addition to their enterprise software. As part of their education division, they have designated a series of "Showcase Schools" that have been deemed the cream of the crop of digital transformation. It is my mission of this thesis to explore firsthand what it means to be on the cutting edge of digital transformation in an educational setting. The schools I have chosen to research cover a broad spectrum: these schools cover all ranges of primary and secondary education, are mixed between public and private, and are in both wealthy and disadvantaged areas.

For practical reasons of this research, between language barriers, the timeframe of data collection, and budgetary restrictions, I chose to perform my research in the United Kingdom over the course of two weeks. It was most feasible to do so internationally due to the higher

density of Microsoft Showcase Schools in a small region and because of the ease of travel, monetarily and timewise, that was available via the National Rail train system.

It was my mission during these visits to see as diverse of a set of schools as possible in different areas so I could get a comprehensive picture of all the possibilities of schools that could be considered Showcase Schools.

To gain a full appreciation of the different Showcase Schools I visited, it is essential to understand how a school can attain the status. To become a Showcase School, schools who are immersed in the Microsoft product offerings for education can nominate themselves to be incubator schools—a step before the coveted showcase status—that means that the school and its staff have committed to digital transformation and are ready to do what it takes to become a Showcase School. These schools embrace the very foundations of Showcase School status by adopting Microsoft's K-12 Education Transformation Framework (ETF), a guide for education leaders to navigate the complexity of digital transformation (Microsoft ETF). The ETF has four essential pieces that create a holistic approach to digital transformation: leadership & policy, teaching & learning, intelligent environments, and student & school success. (See the graphic in Appendix A.)

Each metric that the Microsoft Showcase School rubric (Appendix A) assesses is entirely based on the ETF. Per the ETF, I will briefly explain each of these categories. Leadership & policy is the "collaborative envisioning and the creation of an intentional culture of innovation and learning with shared goals that engage the community and motivate all stakeholders to plan and lead change" (Microsoft ETF, p. 2). Teaching & learning, as defined by the ETF is "helping all students achieve their potential by taking a student-centered approach to explore all aspects of teaching and learning […] with a focus on understanding and meeting the needs of all students"

(Microsoft ETF, p. 3). Intelligent environments are “developing safe and secure onsite and online environments and leveraging data analytics to optimize student outcome” (Microsoft ETF, p. 4). Finally, student & school success is “anchored in equality and inclusion, building capacity through professional learning and development for all to ensure students develop their social and emotional skills are successfully prepared for the future” (Microsoft ETF, p. 5). The four main pillars of the education transformation framework lay the foundation for what incubator and Showcase Schools are assessed on to determine their ability to become successful Showcase Schools. Driven by 21st-century learning design and future-focused and social-emotional learning, Showcase Schools have a commitment to educating the whole student, well beyond simply using the technology.

Methodology

Picking the schools to participate in the research study was not an easy feat, with seemingly endless options of schools across the UK who earned the Showcase School status (despite the difficulty of earning the designation). To get the most diversified answer to my research question, I wanted to explore primary and secondary schools in various locations, school types, and sizes. In careful study of the Showcase network, I chose five schools across the country with different backgrounds, different populations serviced, and different reasons to become a Showcase School. The most important factor to me while identifying these schools was the unifying area of excellence they shared: transformational leadership. (These were among many, including future-ready skills, coding, STEM, machine learning, social-emotional learning, etc.) (Microsoft Showcase Schools, 2022-2023). In the later chapters of this paper, I will explore each school's definition of transformational leadership.

The schools that participated in this study included three public primary schools and two secondary boarding schools. The primary schools were Bishop Creighton Academy in Peterborough, Richmond Academy on the Isle of Sheppey, and Cornerstone Church of England Primary in Hampshire. The boarding schools were Queen Anne's School in Caversham and Downe House School in Cold Ash.

For this project, I will be using primarily qualitative research strategies to examine, compare, and contrast the Microsoft Showcase Schools I am visiting to see, firsthand, their digital transformation strategy. There are three categories of my research methodology: observational, interviews, and surveys.

This first method of my research is essential—seeing technologies in action, via observations, in the classroom is the main purpose of this study. I want to see how teachers

implement the technologies, and in turn, how students use Microsoft technologies to stay on the cutting edge. It was a fundamental factor of this research to see the student reactions to the use of the technology that was guided by the teacher and 21st-century learning design. In my observations, I was not only examining the teacher's employment of the technology but also the student experience in the classroom. This is the part that made me most excited—seeing the reactions and interactions of the students live, in-person was essential as they are, of course, the direct recipients of the education that each of these Showcase Schools is attempting to augment through the use of technologies, keeping in mind 21st-century learning design principles and the Microsoft Education Transformation Framework.

The second piece of the study contains interviews: I arranged one-on-one interviews with faculty, staff, and administrators who use the technology. I asked questions relating to their position as teachers/administrators and their relationship with the technologies and Microsoft. While I had a series of prepared questions, these interviews contained many insights about being a Showcase School that I could not have possibly prepared for by way of question preparation.

For the final piece of my research, I gave anonymized surveys to the teachers and students within the schools that I was observing that ask short answer questions related to their experiences using technologies in the classroom. These surveys contained two Likert scale-type questions, asking participants to rate both how much they use each Microsoft tool in the classroom (Microsoft Word, Excel, PowerPoint, Teams, Sway, OneNote, Bookings, OneDrive, SharePoint, etc.) and how useful each of the same tools are in their classroom.

In terms of recruitment and who participated in each of the aspects of the research—observation, interviews, and surveys—was at the complete discretion of the school. At Bishop Creighton Academy, I interviewed 4 teachers, collected 16 student surveys and 9 teacher/staff

surveys, and sat in on 8 classes. At Richmond Academy, I interviewed 1 teacher and observed that teacher's class for the entire school day. At Queen Anne's School, I interviewed 1 teacher/administrator and 2 staff members, collected 142 student surveys and 19 teacher/staff surveys, and sat in on 7 classes. At Downe House School, I interviewed 1 administrator, collected 110 student surveys and 7 teacher/staff surveys, and sat in on 5 classes. Finally, at Cornerstone Primary, I interviewed 1 administrator and 2 teachers, collected 11 teacher/staff surveys, and sat in on 4 different classes.

Each school had its own approach to welcoming me as a visitor and structuring my visit. Every host crafted the schedule that they deemed to fit my request to see the most amount of technology and 21st-century learning design as possible. While most of my day in each school was actually in observations, the number of lessons and types of classes were varied and were chosen by each school. Perhaps in one school, I observed the entire school day with just one teacher, and in another, I moved from class to class every forty-five minutes or so. Each school host asked me what I wanted to see during my short time at each school, and my response was always the same: "You know your school best, so I would like to see whatever you think is best for me to see." From speaking with each host, it was not a matter of choosing the teachers who would be *willing* to participate, but ultimately choosing teachers and crafting the best schedule that would accommodate my request to see as much learning as possible. There was not one single "right" way, nor most effective way, to showcase the school's technology, and I believe that each school's approach in selecting which lessons I would see, which staff and faculty I would interview, and what aged students would take part in the survey was at the discretion of each school was the most effective way to go about researching each site since, as I said, the hosts knew their schools best and what would be most beneficial for me to see.

Chapter 1: Bishop Creighton Academy

The first school I visited as part of my research was Bishop Creighton Academy, a one-form primary school (one class of approximately 30 students per year group) that sits about one hour north of London by train in a city called Peterborough. Perhaps the school with the most interesting journey to Showcase School status in this research journey, Bishop Creighton Academy is a star example of embracing digital transformation to enhance learning outcomes.

For this school, perhaps above all others in this paper, background is key. In their 2014 governmental Office for Standards in Education (Ofsted) evaluation, the school was scored "inadequate," the lowest of four rankings (Ofsted, 2014). This ranking meant the school required special measures to improve the education for the students it serves. Principal Vicki Redhead, in my data collection, told me all about the challenges the school faces. With over 35 first languages spoken in the families of the students, over 75% of families have English as an additional language. It is important to note, too, that Peterborough is a very economically disadvantaged area. Despite these challenges, and through Principal Redhead's leadership, in just eight months from their inadequate ranking from their Ofsted report, Bishop Creighton Academy became a Showcase School.

The area of excellence designated for this school by Microsoft was—and rightfully so—transformational leadership. The initiative they claimed for change after a poor report cannot be overstated. They demonstrate the picture-perfect definition of digital transformation: Bishop Creighton Academy made sweeping changes, rocking the very foundation from which the academy was built, to make technology part of everything they do, and not just for the purposes of being able to make the claim. Technology has truly revolutionized their processes to make for the best education for the two hundred students they serve.

The principles for their use of technology were simply outstanding, as I could see within moments of walking into the building. One of these principles is that the devices are to be seen as stationary items, just like a pencil and paper. Principal Redhead was proud to tell me that not one device trolley/cart can be found across the school. These devices are not to be "put away," for if they are out of sight they will become out of mind. This makes the devices all the more accessible and easily incorporated into each lesson. This leads to another foundational principle: that the technology is not an add-on but rather weaved through the whole curriculum. It is because of this principle and dedication to the use of technology that the students of Bishop Creighton Academy used their devices for more time than any other primary school I visited.

Most of the instructional time is spent in Microsoft OneNote and Microsoft Teams. Microsoft Teams serves as the virtual hub for their classes, serving as a place for announcements and discussions. The use of discussions in Teams allows students to learn how to properly communicate via an electronic medium, plus teachers can monitor student discussions without having to be in multiple places at once. (In the interview I had with Principal Redhead, she reports that students are learning how to properly communicate with each other virtually, like how their tone can come across, etc. She says they do not teach it, but it comes naturally. For comedic effect, students even like to include GIFs in their discussions!) Within Microsoft OneNote, each teacher has a notebook for their class/year group. In their virtual notebooks, students are writing—*digital inking*—along with the teacher, using the same worksheet the teacher is projecting to the big screen in the front of the room. Some students prefer to type and others prefer to "ink," and either is perfectly acceptable schoolwide, further increasing Bishop Creighton's accessibility to learning. Teachers and students alike are enamored with OneNote's infinite canvas, the idea that one "page" in a notebook can be line-ruled, graphed, or blank, and it

goes on forever in any direction. Teachers use this for planning by creating calendars and graphic organizers that help them organize their lesson plans.

Going further on the idea of students' ability to choose between "inking" or typing in most scenarios—independence is a major key to the Bishop Creighton education. Students have seemingly unlimited options about how they present their learning, between creating Sways (dynamic websites), PowerPoints, Flip (short form) videos, building in Minecraft, creating in Paint 3D, and of course, the classic writing a document in Word. Accessibility is of utmost importance at the school; 35 first languages spoken present quite a challenge for teachers and students. The tool Immersive Reader is touted as a "lifesaver," translating text and reading aloud any text in over 100 languages. This tool is equally helpful for the English as an additional language student as it is for the native English speaker who has difficulty reading.

In every minute of class time I observed, each student was working productively on a Windows 10 2-in-1 laptop (a laptop that can fold into a tablet form). Students in this school are 1:1, meaning one student per device—as Deputy Principal Kayley Roberts tells me, "We wouldn't expect students to share an exercise book, so why would we expect them to share a device?"

The principles of technology use as something that is never put away keeps these inherently engaging devices from being a novelty. In a Year 5 math class, I was thoroughly impressed to see that all students had their devices open to OneNote, were paying attention, taking notes on the same worksheet that the teacher was writing on that would be displayed on the big screen in the front of the room. How is it possible, I asked every teacher and administrator in the school, that students always remain on task even though they have a fully functioning, color touchscreen internet-capable device in their hands? (Anecdotally, the same

cannot even be said for college students in a lecture…) The answer is two part: one, the fact that the devices are always around (remember, stationary) means that using the devices is not a novelty, and two, it is ingrained in the children from day one what appropriate use looks like and when it is time for play versus time for work. This, of course, does not mean that establishing these rules at the start of the school year is at all easy. Different teachers, especially those who teach younger-aged children, told me that it is challenging to set the expectations at the beginning of the year, though students do adapt over time. Principal Redhead did tell me that, on the rarest occasions, students who misbehave on their devices have them taken away, despite the teachers' plea for them to keep them—it takes extra work for teachers for them to print their entirely-digital teaching resources for the day! This is an example of institutional-level dedication to the proper use of technology and a clear depiction of the support that the administration creates to create an operable and innovative technological environment.

In terms of the surveys collected, the data was clear: students' favorite tools to use were OneNote and Minecraft Education. Counterintuitively to common thought, Minecraft can be and is successfully used as an educational tool. In my time at Bishop Creighton, I saw two excellent examples. One, the Year 2 students were learning about medieval castles and the different materials used to build them and how to protect them. To apply this knowledge, students were tasked with designing their own castle on Minecraft, complete with a moat! The second example I saw was in the story of the fable of "The Three Little Pigs," where students constructed houses built of different materials to demonstrate how durable they are. This undoubtedly engaging tool works so well for this age group as it makes learning so fun that the students do not even realize that they are learning.

The teacher surveys offered thought-provoking insights as to how their use of technologies in the classroom has evolved. If there's one thing I learned above else is that the teachers love the flexibility that Microsoft 365 brings them. Learning time is maximized as there is no need to hand materials out. Another highlight is that the technology simplifies teacher workloads: they can easily move documents around and share them with other teachers.

Bishop Creighton Academy brings to real life what I believed to be true before I could perform this research—that armed with internet-capable devices, student learning is literally limitless. The students in this age group are digital natives. When they have a question—especially something particular, like the height of the Eiffel Tower—they simply Google it. They do not need to be taught how to use Minecraft, but rather they just pick it up. Further, on social-emotional learning, these students are familiar with communicating with each other in their class Team complete with emojis and GIFs.

Deputy Principal Kayley Roberts said that they are hoping to break the cycle of disadvantage in the school with the use of the devices. By making these students future-ready learners—independent thinkers who can take learning into their own hands even beyond the school walls—they have immense empowerment to break the cycle of disadvantage that Bishop Creighton fights against every day.

Chapter 2: Richmond Academy

Richmond Academy is a two-form primary school on the Isle of Sheppey in Kent. Due to time constraints, I was only available to stay at Richmond for one day, and I spent it shadowing Mr. Cameron Kaljouw, a Microsoft Certified Educator and Microsoft Innovative Educator Fellow, for the full day. Similarly to Bishop Creighton Academy, despite being in a disadvantaged area, Richmond Academy is proudly a Microsoft Showcase School.

The devices used were solely iPads, which was unlike any of the other schools I visited. This may sound counterintuitive, having Apple iPads in a Microsoft Showcase School—it does not matter what devices are used but rather *how* they are used. Microsoft's full suite of Microsoft 365 products are available in the app store (Word, PowerPoint, Excel, Teams, etc.) which does not limit the students' availability to use the products. The devices stay at school during the week and are checked out on Fridays for the weekend.

A major highlight of my time at Richmond Academy was their use of a newer tool, Microsoft Reflect, which is a social-emotional learning (SEL) tool. Daily check-ins are standard at Richmond, where students open the app through Teams and select the emotion (with a corresponding monster that matches their emotions) they are feeling that day. Teachers have access to an easy graphical interface that allows them to see trends in students' feelings and makes it simple to call attention to students who might need to be checked in one-on-one. In Mr. Kaljouw's classroom, he had a poster for each of the different emotions on the walls that were available for the students to select in Reflect, with guiding questions. One of the questions on each poster was, "What strategies can we use if we feel this way?" This is a prime example of digital transformation and highlights the "redefinition" step of Puentedura's SAMR model: checking in with each student daily through the use of technology, and in turn, using their

feelings as an SEL learning moment is something that just could not be replicated without the use of digital technologies in the classroom. Perhaps Mr. Kaljouw, and any other teacher in a non-Showcase School for that matter, might get a pulse on each student's mood at the start of the day when welcoming them to the classroom, but it is impossible to go as in-depth and track these emotions in a clean interface over time without the use of Microsoft Reflect. An absolutely amazing tool for social-emotional learning, it makes me wonder how not every school uses this (or a similar) tool.

Personalized and individualized learning does not stop at SEL at Richmond. After Mr. Kaljouw introduced the lesson of the day on homophones for roughly two minutes, the students were off to individually work on their iPads. The activity I saw in action was a listening activity, where students had example homophones, like "right/write," read aloud to them and they had to write or type the two words that sound the same. What is so wonderful about this tool is that students can work at their own pace rather than having the teacher announce the word to the class, and they get instant grade feedback that will be shared with the teacher. Some students like to hear the words more than once, and others raise their hands and ask for assistance when they do not understand. This allows Mr. Kaljouw to focus on one student at a time, while still being able to engage with all students and check for understanding. Another benefit of this tool is that it tells the student when they misspell a word, for students overall had increased issues with spelling coming out of the pandemic. This is a great example of what individualized learning, a pillar of digital transformation, looks like, and it does not require the teacher to make thirty different assignments for each student. Rather, students work at their own pace on the same assignment, get immediate feedback, and are offered extra practice in the same session if they have not yet mastered the skill.

As I mentioned in the introduction, the purpose of digital transformation is to augment learning. These schools are not using the technology in devices just for the sake of it, which also means that they are not held to being on the device all day just to live true to a Showcase status. Rather than scrolling between class notes and the exercises the students are tasked with working on, Mr. Kaljouw occasionally writes the class notes on a large posterboard that he can stick anywhere around the room. (Of course, he can and does snap a photo of the poster after it is complete and posts it to the classroom OneNote notebook.) This is a prime example of the school not using technology for the sake of being able to claim large amounts of class time spent on the devices, but it is simply practical in many cases to be multi-modal or physical just the same.

The use of OneNote in the classroom was astounding. Like the other schools I visited, a substantial amount of time was spent in OneNote. It seemed that, with his posterboard technique outlined in the previous paragraph, Mr. Kaljouw had found a balance that worked for him between paper and digital presentation of a lesson. One unique paradigm that I saw in this school was the employment of different colored pens in the student workbook. When correcting student work, I learned that teachers are to grade in black ink and teaching assistants in purple, creating a paradigm that becomes second nature to students when reviewing graded homework. The establishment of this paradigm at a schoolwide level outlines the dedication given by the school to embedding the tools that OneNote gives them into a streamlined process that enhances the student learning experience.

Where Mr. Kaljouw truly stands out from the rest is in his use of Minecraft Education. He actually serves as a Minecraft Education leader for the country, showing teachers how they can use the tool in their classrooms. Mr. Kaljouw explains that Minecraft can really be used in just about every lesson, including history and science. Even when students are not actively building

something, there are signposts that the teacher can write on in the world that can act as instructions or bulleted notes of the corresponding lesson. This means that teachers can build their instructions or lessons right into the Minecraft world and are not limited to templates they find online that are pre-made for a given lesson.

A prime example of how Minecraft Education can be used is for coding, Mr. Kaljouw explains. He is against having them learn to code for the sake of coding but instead wants them to apply it to real-life examples. In one of his lessons, he has them code their way to saving baby turtles from pollution. Not only does this teach them basic coding theory, but also teaches them the urgency associated with survival and brings awareness to the worldwide problem that is saving turtles and other wildlife from pollution.

The example I saw firsthand was really exciting. Integrating Minecraft into a science lesson, Mr. Kaljouw had his students plant trees to outpace the negative effects of fossil fuels on the environment. What Mr. Kaljouw knew—and the students did not, until the end—is that he programmed the world to make it impossible for students to be able to reach the 100% mark of planting all the trees in the allotted time of the lesson. He wanted his students to *feel* the frustration that occurs when we cannot plant enough trees as those that are being cut down, and it certainly was working. Talk about real-world application: one can teach students that we have not been planting enough trees, but one cannot teach the frustration and urgency that is associated with it, also in as an engaging way as Minecraft creates, without the use of technology.

Richmond Academy faces similar challenges to Bishop Creighton as it relates to English as an additional language. Before my eyes, I saw one student who was not understanding the task he was supposed to complete in Minecraft and used the tool Immersive Reader to translate one of

the signposts within the Minecraft world into his native language, Lithuanian. The power that assistive technologies like Immersive Reader simply cannot be understated, given the immense obstacle that this tool resolves for any student who needs it, English as an additional language or otherwise.

Mr. Kaljouw is truly a revolutionary when it comes to technology use in the classroom. I was wowed by the use of the technology from the moment I walked into his room, and I think it is safe to say that this was the most revolutionary day of technology integration all squeezed into one day of visitation. Richmond Academy brought to light the cutting-edge technology usage that I was looking for when I was doing this research project, seeing the absolute best of the best of schools in their digital transformation journey. Between the focuses on social-emotional learning, individualized pacing, and through the use of assistive technologies and gamification, Richmond Academy stood out from the rest.

Chapter 3: Queen Anne's School

Queen Anne's School, a boarding school for girls aged 11-18, was my third stop on my Showcase School route. My host was Mr. Andrew Dax, Head of Digital Strategy and computing teacher at the school. Situated just north of Reading, an hour or so and an easy train ride from London, this school is home to a few hundred boarding and day students. I was very excited to visit Queen Anne's, as after almost a week of being abroad, I had yet to see a secondary school. Queen Anne's most definitely did not disappoint!

The background and reasons for becoming a Showcase School were not at all what I expected; their status as a boarding school played a role in making the decision. As an independent (private) school, Queen Anne's acutely saw the need to become a digital school for both the good of the students and as a marketing tool.

One of the reasons for digital transformation was quite simple and turned into a pseudo-mantra: the school never wanted learning to be lost. And with the cloud, losing learning is impossible. The example Mr. Dax told me is that learning can be done on a whiteboard in a classroom, and then once the lesson ends, the teacher would wipe off the board to prepare for the next lesson. That learning, at that moment, is potentially lost.

Further, the idea of the interactive whiteboard drove the vision for the school's digital transformation. It is hard to underestimate the power that comes with OneNote: the very whiteboard that the teacher uses in class is digitally preserved and can be annotated by students for access at any time. When the school became 1:1, it was quickly realized that their vision become reality.

Secondary schools, like the primary schools I visited, use OneNote for storage of all types of classroom material where students can write and type on the screen. I would say though,

through my observations, that teachers and students of the secondary schools are truly the powerhouse users of the tool. Students have dozens of digital notebooks that contain class material that has been collected over their time in school, full of digital whiteboards that were worked on during lectures alongside their individual notes and homework.

In short, "OneNote" was the most common response on all surveys collected, across all schools, for both favorite and most useful tool. The app is extremely intuitive and has become more so as it has evolved. Within a class notebook, there are two major sections, the content library and the student workbook. The content library holds read-only "files" that update in real-time, and this is where students can find blank worksheets and class presentations. If a teacher is writing on the board—or in the case of some of these Showcase Schools—on a tablet that is projected to the board, this is automatically synced to all student devices via the content library. The second major section is the student workbook, where students can take notes and use the power of the infinite canvas to enhance their learning. Some of the most powerful uses of OneNote I witnessed were teachers using the tool to distribute the worksheet and/or presentation of that day's lecture directly into the students' workspace, where students can write on it along with the teacher. One of the teachers' favorite aspects of this tool is that in the middle of a lesson or as easily at any other time of day, they can pop in and out of student notebooks to check for understanding and see the status of completion. In summary, OneNote is an extremely powerful tool that was used by every school I visited, but Queen Anne's, given the nature of the workflow of a secondary school, used the tool spectacularly. Like all the other schools I visited, one of the most common tools used was Microsoft Teams. This serves as a hub for the classroom where teachers can post announcements and files, and students can turn in assignments and receive feedback in one place.

It is certainly in the use of the technologies like OneNote and Teams that drive digital transformation at Queen Anne's, but none of it, like the other schools I visited, would be possible without the help of leadership. It was at Queen Anne's where I had the lightbulb moment about what makes transformational leadership the area of excellence in these schools, and it is that transformational leadership is that the adoption of the technology is complete and true at the administrator level and trickles down to the staff. To be a transformational leader is to fully embrace the power of the technology to enhance learning outcomes. Mr. Dax illustrated the full depths of transformational leadership at Queen Anne's in his explanation of the conversation to become a 1:1 school: there was extensive preparation to crafting an argument for why 1:1 was the direction that Queen Anne's needed to go in, and within five minutes of the meeting with the head of school the decision was to become 1:1. With the school's wholehearted adoption of Microsoft tools, "this accelerated the need for other departments to fully engage in having OneNote as their main teaching resource," Mr. Dax said.

As I said previously, transformational leadership means that its adoption of the tools starts at the top. This certainly requires investment at the school level; the school must be prepared to invest professional development time in teaching the staff more than how to just *use* the tools but to make sure they are knowledgeable and feel comfortable.

The timing of Queen Anne's adoption of 1:1 for the start of the 2019-2020 school year was quite opportune, given that on the morning of the first nationwide COVID-19 school lockdown, lessons started as usual and—true to their mission—no learning was lost; nothing about Queen Anne's stopped. Of course, the COVID-19 lockdowns could never be predicted at the time of the school's push to digital learning, but it serves as a shining example of the school leaders' forward thinking and willingness to establish an environment of innovation. It shows

fantastic improvement over the communication style of, perhaps ten years ago, when e-mail was hardly used and slips of paper with handwritten notes were being passed around! The school's adoption of the technology and ability to go online without missing a lesson in the wake of the pandemic shows the outstanding agility that using digital tools gives a school, especially when it comes to unforeseen circumstances.

In my time in the classroom at Queen Anne's, I was surprised at the versatility of the devices used. Queen Anne's does not require that students use a specific device, so some students are using laptops, tablets, and 2-in-1s made by Apple, Dell, HP, etc. Despite the differences in devices used by the students, the teachers seemed to be unified in using school-purchased Surface laptops. Even though these devices are best known for being 2-in-1 devices that allow for drawing on the screen of a full Windows operating system, some teachers prefer to type their notes that come on the board, whereas others prefer to markup presentations. Queen Anne's ability to be a successful Showcase School without a standardization of devices used proves that digital transformation is not necessarily about pouring tens of thousands of dollars into the perfect technology, nor is digital transformation a destination that can be reached, but rather about evolving the use of what the students already have.

Queen Anne's is a star example of what it means to be a Showcase School. During my visit, I attended a meeting that Mr. Dax held with other Showcase School leaders in that region of the country, what they call the "Thames Valley Showcase Network." During an afternoon of round-table discussions and presentations, about 12 school leaders from around the area congregated in a classroom of Queen Anne's and discussed what is new and upcoming within Microsoft school technology and outside of the brand, how they worked towards preparing their Showcase applications, and how they can better their adoption of the tools they have as to make

a stronger learning experience for the students. This dedication to collaborate with other schools about digital transformation—and an international researcher—is something that Queen Anne's and all other schools I visited proudly claim: they do not have any secrets and are willing to share what they have learned and how they use the technologies to anyone in the education technology sphere who is willing to listen.

Chapter 4: Downe House School

Downe House School is, like Queen Anne's, an independent boarding and day school for girls aged 11-18 in Cold Ash, near Newbury. It was fortunate that the schedule worked out so I saw both independent boarding schools back-to-back on my visit to the UK, for I was able to compare and contrast while I could remember the nuances of both visits. My host at Downe House was Mr. David McClymont, the Head of Digital Delivery and Innovation and long-time staff member at Downe House.

One thing that was supremely unique about the setup of Downe House School is the infrastructure of technological leadership. At all schools I visited, there is typically a digital learning lead that champions the Microsoft tools—referred to as "evangelists" by Mr. McClymont—and a separate, sometimes outsourced to a private company, information technology department. Of all the schools I visited, only Queen Anne's and Downe House had their own IT department in-house, but Downe House exemplified how to bring these two worlds of technology administration and technology usage together.

Mr. McClymont described to me how his position grew over time. His latest position, Director of Digital Delivery & Innovation, sprouted directly from his previous position, Director of Information Systems, which he shares was not an accurate description of what the position evolved into. In his new position, he still oversees the staff in the information technology department while leading the school in their digital transformation journey. His typical job duties include the standard responsibilities that come with being a school IT director, but he also regularly sits in classes to observe the teachers' and students' use of technology in the classroom. It is quite convenient, in my experience, because he can jump in to help with technical issues if they should arise during a class. Because of his position, he was able to accompany me to all

lessons that I observed over the two days I visited, which was not within the bandwidth of the other school leaders of the schools I visited given their other job duties. By regularly observing lessons, he has a unique position that allows him to see exactly how, on a micro-scale, the technology he recommends employing is being used, and he can see live reactions and feedback. The benefits of having an integrated information technology and digital learning department are plentiful and lead to the best student outcomes in my experience.

To further enhance the digital learning experience at Downe House, all students are required, by dress code policy, to have a Microsoft Surface device with them at all times during the school day. Downe House was the only school I visited as part of my thesis journey that required all students to use the same device. This policy is logical—it levels the playing field and ensures that all students are equally supported on their devices. This decision by Downe House makes for a seamless workflow; all students are on the same page and are ready to help each other out in a moment, plus teachers and the IT team have the benefit of all working with the same product.

There is also something to be said about ease on the school for having the hardware, Microsoft Surface; operating system, Microsoft Windows 11; and software, Microsoft Office 365 all managed by one company—in this case, Microsoft. This allows for the schools to have one-stop shopping for all technical needs, be it issues with devices or for purchasing of new equipment. When a school has multiple devices, including Dell and HP laptops, iPads, etc., it can be a challenge for the IT team to manage technical issues and often results in the use of a consulting firm/middleman to manage the variety of issues that come along with using multiple providers. It creates a much more streamlined workflow, in that, no matter the computer

malfunction, software or hardware related, given that it is not an issue caused by the end user (the student), there is only one place—the manufacturer—to call.

Sitting in a Downe House classroom, it is easy to see why they are a Showcase School. Perhaps it is because Mr. McClymont arranged a jam-packed schedule of lessons he knew would feature technology, but every lesson I saw used technology in some way to enhance student learning. All students, in every lesson, have their Surface device open to their class OneNote notebook, following along the teacher's slides or writing their own notes from scratch. The teachers are almost constantly moving about the room and are not tethered to the front of the room to use the interactive whiteboard—they can use the Surface device in their hands that screencasts to the television screen in the front of the room. (Mr. McClymont tells me that the money they save on no longer purchasing interactive whiteboards/panels is reinvested into the purchase of better-quality televisions.) In each class I saw, the teacher can float around the room while lecturing and engaging with the projector, something I had never seen so effortlessly before. From a classroom teaching standpoint, of course, this allows the teacher to ensure that all students are on task with the given assignment. And as with previous schools, Downe House teachers also pop in and out of student notebooks to gauge student engagement and understanding.

Now for the most exciting part—the learning! Students are using the tools in a variety of ways to enhance their learning in ways otherwise never possible. In one class, students were asked to mind map as a way of comprehension. One unmistakable benefit to the workflow of a touchscreen device is the ease with which students are enabled to make mistakes. When typing, students can easily hit the backspace button to erase any gaffes, rather than pulling out an eraser and leaving unclean marks, making accidental holes in their pages, and having bits of rubber

scattered across the floor. The same goes for drawing—no more need for heavy pencil cases full of different colored pens and highlighters: with their digital stylus in hand, students can easily select between an array of tools, including but not limited to pens and highlighters, in seemingly endless varieties of colors and shades. In some classes, teachers like to have students volunteer to screencast their devices to the classroom projector/TV to show exemplary work or to review a student's or group's work. During history lessons, students are prompted to work in pairs and highlight a document using two different colors for similarities and differences: gone are the days in Downe House when students need to pull out two different color highlighters (and remember to bring them to class!).

Learning, with the technology, does not stop in the classroom. Students are constantly learning how to do new things, from enhancing their abilities in presentation and delivery of information through the creation of Microsoft Sway websites, or even in creating their own gradebook in Excel that allows them to calculate their grade average as new assignments are graded. For one class project, the teacher tasked the students to present information on a given topic in any way they see fit, be it a PowerPoint, Sway, or Canva, and was workshopped in class. The teacher was able to go around the room and check in with students on their progress and answer questions, and it became clear that technology does not substitute the role of a teacher, mentor, or guide, but promotes students to be creative, make mistakes, and learn from them.

One of the highlights of my trip to Downe House was my observation of the music class. Students were tasked with using a web-based music editing tool called Soundtrap to create their own remix of the famous five-measure motive of Beethoven's Fifth Symphony. Using the SAMR model, this is a prime example of redefinition (Puentedura, 2006); this activity would otherwise never be possible without technology. Throughout the lesson, the teacher asked prompting

questions to guide them along the journey of creating a remix. (Music skills aside, this also required students to use typical computer literacy skills of downloading a file and reuploading it to a desired location. This is not something that is ever the goal of a lesson, but rather a byproduct that is so valuable for students in the workplace.) The lesson was thrilling: students were creating music on their devices, received real-time feedback, and were able to change their music around with a click of a button. When students were asking questions of the teacher about how to use the program, it turned into a learning moment for the proper use of musical terminology. For example, one student asked about how to change the volume, and this was something that the teacher was able to turn into a learning moment to use not only the correct terminology but to actively apply it to a real-world solution. This was truly one of the most exciting lessons that I saw during my entire trip to the UK.

Overall, Downe House is doing very exciting things with their usage of technology in the classroom. The innovation that occurs here every day is certainly deserving of the Microsoft Showcase School Status and it was an honor to see firsthand the work that they do.

Chapter 5: Cornerstone Primary

Cornerstone Church of England Primary School is a primary school outside of Fareham; the closest city is Southampton. Cornerstone was a unique school to visit, for they are not part of a multi-academy trust (like are Bishop Creighton and Richmond Academies) that operates similarly to an American school district, but rather is an independent, yet self-governed, public school.

Cornerstone Primary is in a gorgeous, brand-new building that was made for them and their inevitable expansion. At the time of my visit, the school had been in their new home for a couple of years now, and they have an entire hall of empty classrooms that are, for the moment, unused as the school plans to expand.

When it comes to being a Microsoft Showcase School, it seems easy to expect that there would be a dramatic skew towards technology usage as opposed to non-usage. This is not the case at Cornerstone, where Headteacher Tim Clarke told me that only about 10% of the day is using technology. What Cornerstone "makes up for" in quantity, surely, is in the quality of their usage both in the classroom and for administrative tasks.

The journey to becoming a Showcase School began in 2020, when the school was allocated an additional sum of funding and said that it could only be spent on technology. Tim Clarke, headteacher, and Henry Penfold, teacher and now Microsoft Innovative Educator Fellow, went to the famous conference, British Educational Training and Technology Show (BETT) in 2020 excited and looking for ways in which the newly allocated funding can enhance their students' technology experience.

Rather than buy any new devices, Mr. Clarke told me that they were very interested in what the Microsoft table had to offer. At the time of attending the conference, the school had

many ways of communication that were simply not streamlined; while they did use Microsoft Outlook to communicate via email, the school also had a Google Calendar in addition, and the main way of "chatting" was through a Facebook group. Mr. Clarke told me that he and Mr. Penfold were so excited by what they saw at BETT with the Microsoft 365 suite, especially how Microsoft Teams seemed to answer all of their concerns about communication with the school, that they were immediately on board. They envisioned the days of emailing themselves files and using USB flash drives being in the past. Mr. Clarke recounts that on the train ride back to Fareham from BETT in London, he and Mr. Penfold spent the ride configuring the administrator side of Microsoft 365 for their school.

To Cornerstone Primary, an important part of their Showcase status is to share their story and allow visitors—like me—to see how the school uses technology. They were even awarded the "Best Showcase Evangelist" title by Microsoft because of how open they are with their journey and sharing their story. Mr. Clarke's name was known by everybody whom I crossed paths with during my time in the UK because he certainly makes the time to establish a presence and share with others what Cornerstone is doing to become so technologically advanced. Mr. Penfold has the title of Microsoft Innovative Educator Fellow, a coveted award that is only given to a few teachers in each region of the UK (Mr. Kaljouw from Richmond Academy in Chapter 2 was another). Another one of their teachers, Tamara Goddard, has become a digital lead for the school along with Mr. Penfold, creating a complete technology leadership roster.

As I said earlier, only about 10% of the time is using technology, a very different strategy (though effective) than Bishop Creighton Academy in Chapter 1. In my experience in observing a variety of classes, all teachers used OneNote as the main tool for the projector. In terms of devices used, Cornerstone has a cart of iPads and Windows 10 laptops that are easily movable

throughout the school. Sometimes, the devices are used in the classroom, but other times their devices are used in the school library, an open space that lives in the heart of the school with no doors, large windows for the most amount of light, and flexible seating (beanbag chairs, movable benches, etc.).

Outside of class, though, students have the opportunity to learn more about technology. Mr. Clarke has established a group of "digital leaders" who are students who have an aptitude for technology and enjoy learning more about it and sharing it with fellow students and their teachers. (An essential component of future readiness is learning independence, which is something I will explore in the next chapter. This digital leader program that Mr. Clarke has started enables students to learn independently and share their learning with others.) For example, student digital leaders learn how to code with different graphical interfaces and show their peers how they can use tools like Minecraft.

In terms of looking forward, Cornerstone Primary is looking at how to embed further the tools they already have using the Microsoft suite. It is not necessarily about the new and flashy technologies that are being introduced, Mr. Penfold tells me, but rather what tools they already have at their disposal through the Microsoft 365 suite and how they can adapt it for their needs.

In terms of transformational leadership, Mr. Penfold tells me about how Cornerstone excels in this area. He says the key driver is that Mr. Clarke is a very open head teacher. In turn, with a forward-thinking leader, the staff is eager to learn about the technologies that the school wants to implement and they have a strong understanding of how to use the digital technologies. This is another example of transformational leadership needing to start at the top, between the passion for educational technology held between Mr. Penfold, Mr. Clarke, and Ms. Goddard, the staff has become quick to adapt. Mr. Penfold points out that having the head teacher drive the

digital technologies and champion them, showing that he can make mistakes with the technologies and that every staff member—including him—is on the learning curve, makes teachers more likely to take risks knowing that mistakes are part of the process.

When I asked the teachers via a survey about their school's digital transformational leadership, their feedback provided insight into how their school has earned the title. While the teachers agree with Mr. Penfold and Mr. Clarke about the importance of active leadership with the drive for change and an enthusiastic approach to managing the organization, the teachers highlight the importance of the teaching team in creating the digital atmosphere. One teacher points out that the team is "strong" and another describes that the majority of staff are "on board with becoming qualified and keen to improve their own knowledge of all aspects Microsoft." Another teacher recounts that they, as a team, have seen the benefits of the tools and they become inspired to share with others how the Microsoft suite has strengthened their learning environment.

It seems only natural that the ability to have a change and growth mindset by the staff at large from Cornerstone is part and parcel of the school environment. The school is actively growing and recently changed buildings into their brand-new site; change seems to be an integral part of the Cornerstone experience. Teachers, throughout the data collected, rave about the leadership, including their ability to embrace change and their ability to be agile and forward-thinking leaders. This paradigm eloquently outlines what all schools should achieve and what they want their kids to do, regardless of the use of technology or not.

Chapter 6: Analysis

There are many ways to be a successful Microsoft Showcase School. It is not about which technologies are used and how; it is about a mindset for forward thinking. Some schools use Microsoft's Surface devices, others use iPads. Some schools like Cornerstone use devices only about 10% of the time. Others like Bishop Creighton see devices as stationary items and are to never be put away. The technology nerd in me wants to get into the weeds with my questions: do you use a cloud infrastructure? How are students logging into the devices—with their own personal Active Directory account or a generic login? What are your wireless speeds like in the building? What I learned is, it does not actually matter—being a Showcase School is about forward thinking and the use of the technologies in an educational setting. While the mechanics of the usage of technology is for each school to ultimately decide for themselves, the Showcase network shows what is possible with the use of the Microsoft 3365 technologies in a classroom. Every school I saw uses Microsoft Teams, OneNote, and Sway, but that is seemingly where the similarities end.

When looking at Showcase Schools as a whole, it is important to review what the process entails of becoming a Showcase School. The complete rubric can be seen in Appendix B. The rubric is entirely built off the Microsoft Education Transformation Framework and assesses schools on their thought leadership, their ability to foster a culture of learning and growth mindset, driving personalized learning, use of data insights to guide education improvements, and of course, the innovative use of technology (Microsoft). Surprisingly, the use of technology is only one of the five metrics on the rubric to assess technology.

These Showcase Schools also have different set-ups for their infrastructure. In terms of who manages their information technology departments, the three primary schools I visited

outsource their IT whereas the two secondary schools have their IT departments in-house. This could have to do with the nature of a public versus a private institution but nonetheless exemplify that there is no one right way to create or maintain a Showcase School.

The Microsoft technologies, the underlying similarity between all schools I visited, create an equitable atmosphere for education. Learning can be greatly personalized without the need for many changes on the teacher's end. YouTube videos can be sped up or slowed down and Microsoft's immersive reader can translate and speak to you for students with challenges. (An aside: Bishop Creighton has a student whose native language is Kurdish. The staff and students and BCA requested that this language be added, and it was. I will go further into depth about this in the coming pages, but Microsoft certainly listens to the schools that it serves.) Further on equitability, technology removes barriers to material things. Gone are the days in which schools need to spend thousands of dollars on printer/copier/fax all-in-one machines, toner, paper, and other school supplies like multi-colored highlighters, pens, and colored pencils that eventually dry up, run out, or get misplaced. In these technological schools, thousands upon thousands of dollars are saved by stepping away from many of these physical supplies. In OneNote, unequivocally every school and student's favorite software, students can write in unlimited colors, highlight anything, and mark up their infinite canvas however they see fit. Not to mention, technology can do it *better* than paper can: students can add photos they take or photos from the internet to augment their OneNote notebook. Technology truly creates the most equitable learning environment, especially when students are using the same devices and have equal access to an internet connection.

My main draw to education technology is that any student, with a device and an internet connection, can learn anything. Learning can happen that we in 2023 cannot yet fathom. As

Microsoft writes in their Class of 2030 document, a large amount of the jobs that the high school class of 2030 will have to support themselves and their families one day do not even exist yet (Microsoft Class of 2030). How are schools supposed to prepare students for jobs that do not even exist? It is in the future-ready skills that these schools are teaching the students.

A common thread between the schools is that they were looking to create future-ready students. Similar to the idea that it is hard to define and prepare for what jobs the students of today will have, it is hard to prepare them to be future-ready when no one has the crystal ball that will outline ultimate preparation for the future. One of the essential legs of this future readiness is the idea of independent learning; if we teach students how to be independent learners, then we can teach them to be far more self-sufficient to take ownership of their learning when they become grown and must learn skills and tools that are not fathomable to us today.

An important piece of independent learning that is a fortunate byproduct of curriculum that uses computers is the literacy and familiarity of computing. Teachers do not have to design a lesson on how to use a computer: how to open a web browser, how to create files and folders, or the purpose of right-clicking on an app. The students intuitively know this, especially because of them being digital natives. If they do not know how, it was pleasantly surprising to see how fast their peers were to jump in to help.

Throughout the paper, I have mentioned the idea of future-ready skills and have established the importance of knowing basic computer skills. It is a frank reality that at just about any job that the students of today will have when they grow up—and the adults of today—will be required to use a computer at some point, for some reason. Whether it is simply to clock in, send an email, or to create an expense report on Microsoft Excel, knowing how to operate a computer is now an essential life skill that these students now have the opportunity to learn in a

welcoming environment. A lot of these students have the literacy to be able to solve their own computer problems, which is another invaluable skill. And if the students cannot figure it out, they ask each other—they know how, and have learned how, to ask for help.

Everything discussed in this paper regarding digital transformation in schools, of course, is a demonstration of "the cream of the crop." Microsoft does not designate an average school with this title, and for this research project, I did not explore the average school. In general, education is a slow sector to "catch up" with technologies. Often, it takes a lot of convincing at all levels—administrators, staff, students, boards of education, etc.—and of course, there is the cost. Some schools like Bishop Creighton and Richmond Academies had no choice; technology was the way for them to turn their school ratings around. Cornerstone was allocated money for technology. The two boarding schools have an entirely different system as independent schools for acquiring technology, which is perhaps part of the reason that there seem to be a lot more independent secondary schools than public schools that have earned the designation.

I asked Mr. Dax and Mr. McClymont at Queen Anne's School and Downe House, respectively, why they believe there is a disparity between public secondary schools and private secondary schools in the use of technology. Firstly, it is important to highlight the transformational leadership that Mr. Dax and Mr. McClymont have employed in their respective schools; without support for technology from the top, as discussed in previous chapters, it is near impossible for effective digital transformation to occur. It was suggested to me that primary schools are more likely than secondary schools to try these digital tools because they have less to lose. Where standardized exams matter so much for the older students (equally for the school's metrics and for the students who are trying to get into college) and in a world where teachers are with each group of students for an hour, it makes sense that secondary schools are less prone to

take risks with anything that could jeopardize the little time the teachers and students have together. In my experience, it is certainly a worthwhile risk, but one that must be taken with full adoption of the school and must face little-to-no trepidation from the school administrators. Perhaps the ability to take risks, in this case, the plunge into technology from a primary school because of the nature of resiliency that a primary school holds between its class sizes, extended time with one teacher, and its ability to stray from a results-driven environment.

A clear example of the "catch up" that needs to occur in the name of technology in education was exemplified in Queen Anne's School's state-standardized exams. The General Certificate of Secondary Education, or GCSE, is an exam that is taken by students in England and holds a lot of weight by schools, colleges, and employers. Many standardized tests, like the American SAT, is an on-paper examination (until very recently). Queen Anne's has been working with the government to allow students to type their exams as opposed to writing them out, and a majority of the students now do so. This requires a lockdown computer account with access to Microsoft Word and no other applications including anything that uses the internet. An example of the inefficiency in the education sector is the idea that after Queen Anne's students type their exams, they must be printed and shipped to the testing collection center, where they are then electronically scanned for scoring. Perhaps this is done because the infrastructure to transmit the exams electronically does not yet exist and would require the internet (which students do not have access to during the exam), but it could also be because the GCSE board has not found a way to securely transmit files that cannot be altered or viewed in transit. This example of inefficiency will undoubtedly be changed in the future, but as it stands, is representative of a school doing their best to create a 21st-century learning environment inside their four walls when

the systems and structures that support them do not hop on board the digital transformation journey for whatever reason.

Throughout the paper, I have explored the benefits of digital transformation and its effects on students, staff, and administrators through a positive lens, for I find, through the support of my research, that the benefits far outweigh the risks and negatives in the landscape of educational digital transformation. That is not to say, however, that technology is always smooth sailing. At the beginning of their digital transformation journeys, many of the schools did not use Microsoft Teams because it was not outfitted with the tools to best support their students and staff. Teams, as with any technological tool in its early days, did not have the features it has now. Virtual classrooms did not exist and video-chatting capabilities were slim. By the time the pandemic shut down schools around the world in 2020, Teams had begun to have features that schools decided were worth the investment of time and eventually adopted the tool if they had not already. If any one recurring tool stood out from the rest in this paper, it is surely Microsoft OneNote. For a long while, Microsoft Teams did not allow the submission of OneNote pages from student's notebooks to be attached to an assignment for submission; students had to print their files to PDF before they could upload it to Teams, not to mention the file would not be dynamic and function in the OneNote environment in PDF format: this was not a feasible solution to many schools. Now, Microsoft has made that feature an option, one that is graciously accepted and used by the schools I visited.

All the school leaders did share with me that Microsoft listens to their requests. As I mentioned above, the OneNote page attachment in Teams as an assignment was monumental. The addition of Kurdish to Immersive Reader to support students with English as an additional language was a game-changer. Another request I heard was for Microsoft to add a protractor to

OneNote. Microsoft's willingness to hear their customers' feedback seems to be a very important reason as to why they have the education client base that they do.

As I have made clear, there is not one way to be a Showcase School. It is not only for the elite schools or for the schools with large technology budgets. Some schools have 1 device per student, others have 50 devices for an entire school that is wheeled around on a device cart. It is not about how much, it is about how it can be used and how it affects one school's use case, and, in some cases, how it solves a problem.

Some schools have the capability to have a fully fleshed digital strategy department, some have their headteacher doubling their duties to be a visionary for digital transformation. Some have dedicated in-house information technology, and others outsource. Some schools require students to have the same device (or purchase the same device for every student), and other schools are multi-modal in using Apple iPads and different models of Windows laptops and 2-in-1 tablets. Two things they all have in common, however, are a clear vision and desire for change and an acceptance that digital transformation is about the journey, not a destination endpoint where anyone can declare, "We've made it!" It's a process, it takes a village—a willing village—but is certainly well worth it.

Conclusions and Implications

The fortnight I spent in the United Kingdom was absolutely eye-opening and truly the experience of a lifetime for an aspiring educational technology leader like me. While I did focus my time abroad on the Microsoft technology suite, because I believe in the products for education, I was truly looking for educational digital transformation. Microsoft just made it easy for me to find examples of what could be given the fact that they have a strong and tight-knit Showcase School team.

It is impossible to predict the future and the long-term implications of digital transformations. In the short term, all the schools I visited, especially those further along in their transformation journey, unanimously agree that they are looking forward to what is coming next with artificial intelligence (AI). AI is certainly the next big thing in technology, better said, the world—every sector is buzzing with excitement over the possibilities that come with the implementation of AI. Today in 2023, we are exploring the wider ethical implications of these tools and seeing concrete examples of how these tools can be used in the classroom.

By and large, as a product of being in the information age, schools love collecting data on the usage of their tools. Besides AI, schools are looking to further their usage and exploration of Microsoft's data analytics and visualization tools, including PowerBI. Along with proof of increased test scores by all the schools I visited, schools were often proud to show visual data about the amount of usage of their devices and time spent in Microsoft Teams and OneNote. The quantitative data they collect here proves that digital transformation does have real, concrete increased learning outcomes. Analytics play a major role in the school: predictive models that use AI can analyze an incredible volume of real-time information, identity patterns, and recommendation actions (Microsoft).

A major benefit of the transformation these schools underwent was a desire for inclusion. I find myself in the field of learning technologies because I am amazed by the power of a computer with an internet connection and its ability to teach a student everything they could ever want to know and more. In the nature of digital transformation is personalized learning, where learning is adapted for each recipient via the technology they use. In my time at the Microsoft Experience Center in London, I saw a variety of input peripherals—mice and keyboards—that keep in mind users with physical disabilities. Mice shaped of all different sizes with different functions exist, including joysticks, squares, rectangles, and multidirectional scrolling wheels; these devices are stronger than ever in supporting inclusion.

A pillar of the Showcase network is the desire to share the transformation journey one's school has been on with others in and outside of the Showcase network. I was pleasantly surprised to see such a willingness to show their schools when I reached out to over thirty Showcase Schools throughout the country. Every school was responsive, eager to show their work. Schools displayed interest in this study because it further legitimized their hypothesis that they have believed—and are slowly proving—to be true: that digital transformation has consequential learning outcomes that drastically change students' performance in school and cause them to be independent thinkers that can be springboarded into society as high-functioning, curious individuals who are equipped to take on the world's endless knowledge via technology.

Becoming a Showcase School or any type of technologically advanced school is not completely the feat that it appears to be. It requires leadership that is willing to try something new and take risks. It is not about how much money the school has or if it needs to have matching devices for all its students. Each school I visited proudly and efficiently does digital

transformation in their own way. It takes a few steps to get started—and it can even be started on a train ride fresh after inspiration like the administrators of Cornerstone experienced.

Being a Microsoft Showcase School requires something special of a school and their leadership. Each host I had invited me with open arms—they seemed honored to share their digital transformation story with an international researcher that would better impact the education technology world around them. Becoming a digitally transformed school is not about numbers or the amount of technology used. It is true that to be a Microsoft Showcase School, a school does have to meet a certain metric about the number of students who use devices and how many teachers are Microsoft Certified Educators and/or Microsoft Innovative Educator Experts, but Microsoft's designation is not the only factor that represents a school's ability to be digitally transformed. It is about the people and their leadership. Without the emphatic excitement of preparing digitally prepared students coming from the top, it is impossible to create a digitally transformed environment.

Throughout this essay, I have explored what it means to be digitally transformed at a school level. None of this is technology for the sake of using technology, nor is it technology in isolation. It is about supporting the students and staff of a school to use technology to not only augment but to redefine education, recreate meaning, and make possible the impossible through the use of technology. No school I visited advocated for a complete disuse of any and everything analog, for there are true benefits to having at least some things on pen and paper. Digital transformation, more than a destination, is a mindset. It is about preparing students for the future through the lens of technology.

But what is it, really, that the schools are preparing children for? Over and over, I have used the term "future readiness" without much explanation. What is it that we can do for these

students to make them future-ready? Teaching, by 2030, will be renewed as we know it. Nearly every participant in the Economist's survey agrees that the function of teaching must "shift to helping students know how to construct, interpret, and apply knowledge, rather than just learning it" (The Economist, 2020, p.11). With the alarming increase in rates of anxiety and depression in today's youth, nearly half of educators believe that we will be increasing focus on social and emotional learning in the coming years (The Economist, 2020, p. 11). This research proves to be true something that these digital transformation leaders are planning for: learners must be prepared not just for content, but how to be better learners and stronger thinkers, and must become more self-aware.

Schools, above all, must prepare their students to be lifelong learners. Schools that use technology to a fuller extent experience both faculty and students alike who must continue to learn as the technology evolves. All of the schools I visited recommend the Microsoft Learn platform for self-teaching, and of course, dedicate many hours to professional development year after year. Teachers are the bastion of education: they inspire youth to become independent learners once they leave the four walls of the school building. It is quite fitting that teachers in these schools are demonstrating their want and ability to become lifelong learners through the use of technology in the classroom, something that they can model for their students. Technology, in this paper, is the vehicle that transforms education in the five schools I visited. But it is not only in the technology, it is in the desires of the teachers and administration to continue to learn; it becomes their mission to light that spark in each and every student.

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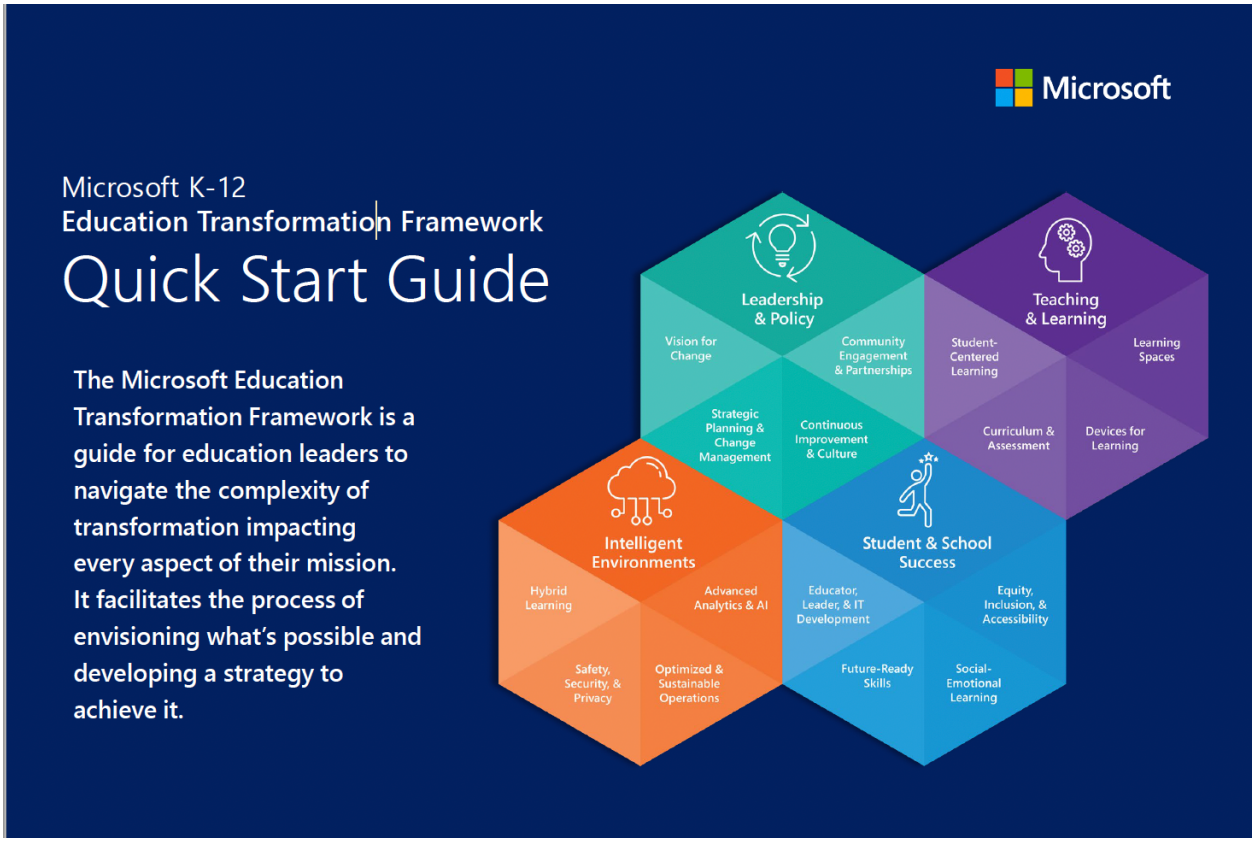
Appendix A: Microsoft K-12 Education Transformation Framework



(Microsoft ETF)

Appendix B: Microsoft Showcase School Rubric Metrics

The school demonstrates thought-leadership in building a school-wide vision as the starting place for a holistic digital transformation using Microsoft's Education Transformation Framework

- Informed by research and potential models
- Has specific, concrete goals for the outcomes of digital transformation
- Clear and easily communicated vision shared by leaders and all stakeholders,
- Uses technology as a strategic lever where digital access is not the end goal; learning is the goal and technology is a means used to achieve that goal

Descriptors adapted from ETF

School leader(s) foster a culture of learning and growth mindset as evidenced by their commitment to creating sustainable change in teaching and learning practices through continuous and job-embedded professional development strategies.

- Builds teacher effectiveness through intensive focus on meaningful and continuous professional learning
- Establishes mentoring, coaching, and collaboration opportunities at the school
- Empower teachers to make their own decisions and take risks to meet the needs of every student
- Drive efforts to connect with other leaders and educators locally and globally to share best practices

Descriptors adapted from ETF

School leader(s) drive personalized learning to meet the individual student's academic, emotional, and social needs and help every student realize their full potential. Inclusion and accessibility are integral to policies and practices.

- Professional development on personalized learning leveraging technology such as Office 365 for Education, Teams (Staff/Faculty/Student), OneNote, Skype, Flipgrid, and Minecraft
- Students are encouraged to take greater responsibility for their learning
- The school provides accessible technology that can meet the needs of all students

Descriptors adapted from ETF

The school demonstrates innovative use of technology, using Microsoft solutions, to drive positive impact and student success with future-ready skills

Computational Thinking
Thinking about problems strategically in all curricular areas to create solutions through abstraction, algorithms, decomposition, and pattern recognition

Creativity and Innovation
Using ingenuity and imagination, going outside conventional boundaries, when shaping ideas into a product

Critical Thinking
Integrating relevant and sufficient information to address an essential question, gathered from multiple and varied sources

Collaboration
Sharing responsibility to make substantive decisions together about the content, process, or product of the work

Communication
Producing extended or multi-modal communication Descriptors

adapted from Jeannette Wing's work and 21CLD

Data insights provide guidance for education improvements and visibility into the progress towards the digital transformation vision.

- Use data to inform decisions
- Leaders use metrics to define and measure progress and course correct where needed
- Monitoring and evaluation results are shared with stakeholders for transparency, buy-in, and participation