

FROM PRINT TO PIXEL:

The role of videos, games,
animations and simulations
within K-12 education

Speak Up 2015 National Findings

 SpeakUp



Introduction

"I feel that school in the future will refine the idea of technology in virtual, physical class, and the combination of the two. It would be cool to see that in 5 years, we use physical and electronic means of learning interchangeably."

Male student, 11th grade, Maryland

In many ways, the migration of education today from an environment dominated by print-based content and resources to new learning platforms that leverage multi-media, multi-sensory content follows a pattern almost as old as education itself. At the heart of this pattern is the introduction of new technological advancements that transformed the information dissemination and education delivery. However, the sustainability of those changes is actually more dependent upon the ways that teachers and students respond to these disruptive innovations than simply the new tools themselves. Examples from ancient to current times illustrate the evolutionary process.

Teaching and learning in ancient Greece was based on an oral tradition where memorization and knowledge sharing through dialogue was the gold standard for education. The epic poems of the Iliad and the Odyssey are products of that oral tradition of storytelling and sharing. The popularization of written texts, however, by Socrates' student, Plato, forever changed education as it provided a means for the rich history of stories and knowledge to be written down and shared more broadly beyond the steps of the Parthenon. The great philosopher and teacher Socrates was dismayed at this "technological development," however. In his worldview, the written word was not truth but an inadequate facsimile of that truth as only in the transmission of his ideas directly to students was there validity. Nonetheless, this advancement could not be stemmed. Scholars changed their pedagogy from oral information transmission to reading written texts aloud to the students gathered at their feet. Suddenly, information was no longer resident only in the minds of the great scholars, but rather rested within the parchment they held in their hands.

Subsequent technological advancements in printing, publishing and transportation allowed the written texts to be distributed more widely. As in ancient Athens, this innovation was initially met by distrust and fear by those that previously had a stake in the status quo. The monks of the Middle Ages had positioned their role in medieval society as the keepers of knowledge and scholarship through their control of the creation and illumination of handwritten books. The disruptive innovation of printing presses suddenly allowed a new set of learned people outside of the monasteries to not only access information on a greater scale, but to be able to create these texts and thus, give voice to new ideas and new perspectives on knowledge. From that development evolved the use of written texts based upon a common set of knowledge, current for the time, as the foundation for education. The birth of the standardized curriculum and its primary delivery vehicle, the printed textbook, became the new tradition

for transmitting knowledge from teacher to student.

Our K-12 schools are at a similar evolutionary point today. New technological advancements and the resulting disruptive innovations in education delivery are creating uneasiness amongst some educators about the role of the teacher, in particular, in a new worldview of education. Just as many ancient scholars believed that students were empty vessels waiting to be filled with knowledge, many teachers cling to the idea that their role is to fill the brains of their students with information that is exclusive to them. However, the pervasiveness of information, ideas and experts available on the Internet, and unprecedented ability of students to act upon their curiosities and interests to seek out that knowledge has forever disrupted that exclusivity of information that formerly defined the value of teachers and school. With one click on a smartphone, students can read not only the original text of the Odyssey if they wish, but watch a TedTalk video about its relevancy in today's society and listen to a podcast debate amongst modern day scholars about the legacy of Greek lyric poems on today's modern songwriting. Rather than wishing that the proverbial ship had not sailed, it is now time to understand that this move from a predominant print-based delivery system in education to new learning environments such as those where videos, games, animations and simulations are increasingly the norm for both teachers and students, is both evolutionary and advantageous.

For the past thirteen years, Project Tomorrow's® annual Speak Up Research Project has provided schools and districts nationwide and throughout

the globe with new insights into how today's students want to leverage digital tools for learning based upon the authentic, unfiltered ideas of students themselves. Additional insights from teachers, librarians, administrators, community members and parents through audience specific surveys for these important stakeholders have painted a picture on the current state of education relative to digital learning adoptions. Each year, education, policy, research and business leaders leverage the Speak Up findings to understand how schools and communities can better serve the learning needs of today's digital learners and how to scale high impact innovations in new classroom models and the use of technology to transform education outcomes. Speak Up reports over the past few years have focused on connecting the digital dots for learning, mapping a personalized learning journey and moving from chalkboards to tablets as part of a digital conversion effort.

This year's report departs from that tradition of examining the state of education change and focuses on a particular phenomenon that we have documented over many years, the emergence of pixel based digital tools, specifically, videos, games, animations and simulations, as legitimate vehicles for learning. Leveraging the views of 415,686 K-12 students, 38,613 teachers and librarians, 4,536 administrators, 40,218 parents and 6,623 community members representing over 7,600 schools and 2,600 districts in the United States and around the world, this year's Speak Up report examines three aspects of this phenomenon. First, we will discuss what is precipitating the move within schools from print to pixel to lay the

foundation for then understanding how teachers and students are using these digital tools in their classrooms. As we know from past Speak Up reports however, students do not see learning as only happening from 8 to 2:30 each day. To understand fully the extent of the print to pixel migration, it is necessary that we examine how students are also self-directing learning beyond the classroom with these new modalities. Finally, our ending thoughts give a glimpse into the future in terms of what we should expect in further adoptions of these visually engaging digital tools in education. The voices and ideas of our students provide us with that glimpse into the immediate future of school in 2020.

"I believe that in 2020 all of my classes will have online resources, and be almost completely digital. We will still attend school and interact but it will not be on paper, it will be on the computer. We will be able to find our own resources to learn from as well as what the teacher gives us."

Male student, 10th grade, Virginia

The journey from print to pixel in our schools

The increasing use of videos, games, animations and simulations across all segments of the population to support both informal learning and entertainment presents an interesting opportunity to explore translating those activities and tools from the everyday world into the school world. The pervasiveness of these engaging and interactive forms of information transmission in our society today cannot be underestimated. For example, in just 10 years, YouTube has amassed over a billion users worldwide with growth of at least 50 percent year over year for three straight

yearsⁱ. The digital games market at \$6.2 billion is ten times the size of the traditional board game market todayⁱⁱ. Following the lead of the military and corporate sectors, higher education institutions are increasingly interested in game-based instruction as a way to engage and motivate learners of all ages and backgrounds.

The K-12 education sector is also particularly interested in how to leverage these multi-media, multi-sensory digital resources to support enhanced student learning and teacher productivity. As well documented by previous Speak Up reports and others, the use of digital content, tools and resources in classrooms has also experienced year over year growth. For example, in 2005, only 30 percent of high school students noted that they used an online textbook regularly as part of their school activities. This year's 2015 data reveals that 46 percent of high schoolers are now using online textbooks, a growth of over 53 percent from 2005. Teachers' use of videos in their classroom has experienced even a faster rate of adoption. In 2012, less than half of all teachers said that they were using online videos within their instructional practice (47 percent). Today, over two-thirds of teachers (68 percent) are regularly sourcing videos from the Internet and using them in their classroom to stimulate class discussions and to bring a real world context to academic content for their students. Though long considered an unattainable goal in an education environment that has thrived on worksheets and poster boards, the proof of the sector's journey toward more digital content may be best represented by their level of "paperlessness." Almost 60 percent of technology leaders say that one-quarter of instructional materials in

their schools today are digital, not paper-based; 26 percent say that their level of paperless-ness is 50 percent.

"I think that schools will be completely paperless in 5 years. There will be a lot more online classes for younger generations. I think that a lot of learning children do will be through the medium of the Internet or interactive apps/games."

Female student, 12th grade, Wisconsin

Whereas in the past, classroom use of tools such as videos, games, animations and simulations within instruction represented outlier behavior on the part of risk-taking teachers, today it appears that these activities are not only gaining scale within schools but are endorsed and promoted by school and district leaders. In reporting their districts' use of various digital tools to support learning, 82 percent of district administrators say their districts have now implemented a variety of digital content and online resources in their classrooms. Additionally, five out of 10 administrators note that the implementation of digital content resources such as videos, simulations and animations was already generating positive student outcome results. Relative to game-based learning environments, 40 percent of administrators say their classrooms now include digital games as learning tools, outpacing even the adoption of 1:1 tablet programs in classrooms (33 percent).

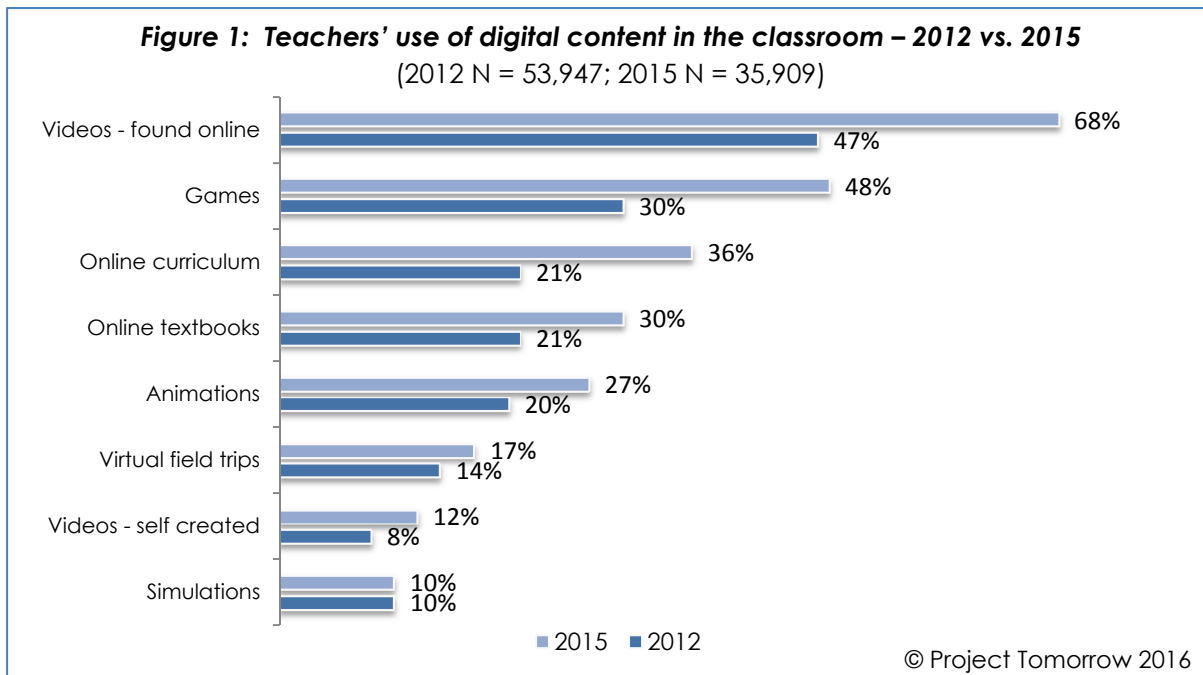
School leaders' reasons for endorsing more digital content and actively promoting its seamless inclusion in daily instruction mirrors what they see as the key drivers to increasing student achievement.

Principals: What are the primary benefits of using more digital content within instruction at your school?

1. Increases student engagement in school and learning (80 percent)
2. Extends learning beyond the school day (69 percent)
3. Provides a way for instruction to be personalized for each student (60 percent)
4. Increases the relevancy and quality of instructional materials (60 percent)
5. Improves teachers' skills with technology (51%)

Engagement, extended learning, personalization, relevancy of content, and enhanced teacher effectiveness are the key words for developing new classroom models and instructional practices that support the development of students' college and career ready skills. Of these, the last one may be the most telling about the current state of digital content in our classrooms. While the Speak Up results document the increasing use of digital tools by teachers, the speed of progress is not meeting the expectations of school principals.

School principals (84 percent) are almost unanimous in their belief that the effective use of technology within instruction is important for student success. However, they do acknowledge challenges or barriers to meeting the expectation of effective technology usage. A majority of school leaders (54 percent) say their biggest challenge with digital learning is how to motivate



their teachers to change their instructional practice to make better use of these engaging and contextually relevant resources. When asked what was holding back further expansion of their digital learning visions, an almost equivalent number of principals (57 percent) say the lack of teacher training on how to integrate digital content within instruction is their top barrier. This frustration point with principals is further validated by their high expectation that new teachers be fluent in using technology to differentiate instruction (76 percent) and to create authentic learning opportunities for students (68 percent) prior to being hired to teach at their school.

However, the explosion in teacher interest in and usage of videos, games, animations and simulations as learning tools may provide some interesting insights into new adoption paths for other kinds of digital resources. By examining how students and teachers are using pixelated content within the classroom and the valuations they place on those experiences, we can infuse these

new findings into implementation strategies and plans that may address the challenges articulated by school and district leaders.

"I believe that more teachers will be using technology more, through videos and online simulations and games. Many students will be able to use these tools in order to have a more hands on education at their own pace. We will be able to connect with peers easier, and work on our critical thinking skills."

Male student, 10th grade, Kansas

The use of videos, games, animations and simulations within classroom instruction

Whether it can attribute to new solutions or products available for classroom usage, or simply the increased familiarity with using pixel-based tools in their personal lives, teachers demonstrate higher usage of digital content in their classroom this year. As depicted in Figure 1, across all assignments or content areas, 68 percent of

teachers report using videos that they find online within lessons or classroom activities. Almost half of all teachers (48 percent) note that their classroom plans now include game-based environments for students also.

“Virtual reality simulations can help us with subjects like science, help us interact with chemicals or tools that can be dangerous in the real world. Even in History we could practically time travel and experience the Trojan War or experience what it was like to be a Pilgrim without any real danger.”

Male student, 6th grade, Texas

Looking more closely at teacher profiles and characteristics relative to their use of digital content, we see that classroom assignment, years of experience and classroom-teaching model influence the use of the digital content tools for instruction as well.

- Teachers in elementary grades are more likely than teachers in middle or high schools to employ game-based learning environments in their classrooms (K-2: 65%, Gr 3-5: 59%, Gr 6-8: 44%, Gr 9-12: 31%). Contrary to conventional thinking, years of experience are not a differentiator for game usage.
- Teachers in Computer Science (31%), Career Technical Education (21%), Arts Education (21%) and World Languages (20%) are leading the pack in terms of creating their own videos for student usage.
- Simulations are more widely used by teachers in virtual classes (23%) and

teachers who have implemented a flipped learning model (26%) or a blended learning model (17%).

- Years of experience does play a role in the likelihood of teachers to use online videos within instruction, though only to a small degree. Almost three-quarters of teachers (74%) with less than 4 years of experience report using videos as part of their lesson and class activities compared to 65% of teachers with 16 or more years of experience. Correspondingly, 41% of first year teachers like the idea of watching videos as part of professional development activities; only 1/3 of the veteran teachers with 16 or more years on the job share that same value.

From elementary through high school, students report watching videos (both created by their teacher and found online) and playing digital games as part of their learning processes (Table 1). The greater percentage of students in elementary grades playing digital games follows the finding that the nexus for game-based learning environment adoptions is with elementary teachers today. Students in kindergarten, first grade and second grade report even higher levels of game play (77 percent). Students in high school are more likely to research and use videos that they find online themselves. Amongst those high school students, girls' search/use video behavior (44 percent) outpaces their male counterparts; only about one-third of boys say that is a regular activity (34 percent). Again counter to conventional wisdom, game play has no gender differentiation across all grade levels.

Table 1: Use of technology for learning – watching videos and playing games

Grade level	Watch a video created by my teacher	Watch a video that I found online	Play a digital game
Students Gr 3-5 N = 121,690	22%	23%	65%
Students Gr 6-8 N = 131,727	30%	34%	23%
Students Gr 9-12 N = 107,086	29%	39%	16%

© Project Tomorrow 2016

"I believe that school in five years will greatly depend on technology. For classes teacher will post videos and lectures before and after school to deepen the student's learning and then discuss it during class. Through this students will be able to have a more in depth learning about the world because they will be reading and having interactive activities online."

Female student, 9th grade, Texas

Deeper Look: Videos within education

The ubiquitous accessibility of academically rich content videos via services such as YouTube, Kahn Academy, NASA, Ted Talks and others makes the examination of videos a particularly interesting one for understanding how teachers and students are using these tools for learning. This ubiquity may be a contributing factor in the 45 percent increase in teacher usage of videos from 2012 to 2015. Though some video services require a license to access their content, the web is rich with free video-based content for students and teachers to use, thus allowing for equitable access from any web connected device. Additionally, the emerging classroom model of "flipped learning" is steadily gaining interest amongst teachers. Many iterations of flipped

learning include the use of videos (teacher created or sourced) as homework activities and then class time focuses on project-based learning and personal remediation activities. While only 16 percent of teachers say that they have currently implemented a flipped learning environment in their classrooms using videos, over one-third of teachers (35 percent) say they are interested in receiving professional development on how to implement this innovative model in their classroom. In addition to examining the use of videos within instruction, this deeper look also discusses the roles that teachers and students ascribe to video watching as an instructional practice.

The top subject areas in which the students in grades 6-12 watch videos to support homework, research projects or studying are science (66 percent), math (59 percent), social studies/history (53 percent) and English/language arts (45 percent). Approximately one-quarter of the students also report that videos are part of their schoolwork activities in world language, health and physical education classes as well. Additionally, 20 percent of high school students note that they have created videos to

Table 2: Teachers – why are you using videos and animations within your lessons or class activities?

Uses of videos and animations	All Teachers N = 35,909	Teachers using videos they find online N = 19,286	Teachers who are creating their own videos N = 3,432	Teachers who are using animations T = 7,697
To introduce a lesson or unit	68%	78%	78%	80%
To activate students' prior knowledge	69%	77%	78%	84%
To facilitate a class discussion	62%	71%	70%	74%
To illustrate a difficult concept	59%	69%	73%	75%
To support students with auditory/visual processing needs	44%	52%	57%	58%
To provide an alternative to text based class materials	43%	51%	54%	56%

© Project Tomorrow 2016

demonstrate what they have learned as part of a schoolwork activity. Thus, the video aspect of the pixel phenomenon includes both content consumption of online video and the creation of such content by students and teachers as well.

The views of teachers who are using videos (self-created or sourced) as well as animations in their classrooms provide valuable experiential insights

into the role of such tools within instruction and answer the question as to why these tools may be important for student learning and teacher effectiveness. Table 2 illustrates how teachers on the front lines of pixel based education are using videos and animations within their instructional practice, and Table 3 provides their perspectives on the impact or outcomes of those visually-based learning experiences.

Table 3: Teachers - what are the benefits of using videos and animations within your lessons or class activities?

Benefits of videos and animations	All Teachers N = 35,909	Teachers using videos they find online N = 19,286	Teachers who are creating their own videos N = 3,432	Teachers who are using animations T = 7,697
Increased student engagement in the material	65%	75%	75%	78%
Addressed different learning styles	58%	66%	69%	74%
Provided a different teaching approach than my own	46%	55%	56%	59%
More relevant lesson	59%	68%	70%	72%
Enhanced student vocabulary	48%	55%	56%	65%
More efficient learning process by shrinking time students need to digest information	23%	28%	35%	39%

© Project Tomorrow 2016

Just as the teachers' uses for the videos and animations span a spectrum of instructional activities, the outcomes or benefits they see from these experiences also cover a wide range from differentiating instruction to appreciating that these new tools actually can change the time variables associated with learning. Teachers' valuations of the benefits of visually-based content tools are higher for those teachers who are immersed in using these tools in their classrooms. This supports the premise that teachers' personal usage of the tools and realization of the student benefits from those firsthand experiences is a critical component of digital learning adoptions. To that point about shrinking the time students need to digest information, 45 percent of students in middle school agree with that assessment. Additionally, 44 percent of the students feel that they learn more from watching a video than reading a book.

The new paradigm of visual-based, pixel-oriented learning greatly appeals to students for a number of reasons, most having to do with personalizing the learning process, providing a context for academic content and the convenience factor associated with video watching. When asked to identify the reasons they believed that watching online videos is a good way for them to learn, students in grades 6-12 ranked the following benefits as most important:

1. I can watch it as many times as I need to (61%)
2. Makes it easier to understand difficult concepts (55%)
3. Connects what I am learning to the real world (54%)
4. Fits my learning style (53%)
5. Easy to find videos to help with schoolwork and easy to access on mobile devices (53%)
6. More engaging and keeps my attention (48%)

Parents are also supportive of the concept of videos as learning tools. When asked to envision their ultimate school for their child, 43 percent include online videos and movies in their wish list. This valuation may be the result of parents' own increased familiarity with watching online videos themselves for learning, skill development or entertainment purposes. Two-thirds of parents report watching YouTube videos as a regular activity. Parents' valuation of the role of videos within instruction echoes the student and teacher perspectives especially in terms of addressing different learning styles (64 percent) and connecting what students are learning with the real world (61 percent). However, the parents see the highest value of videos in complementing what teachers are sharing in class (71 percent). In other words, parents see the videos as supporting teacher instruction, not as standalone or self-contained learning activities. Especially for parents older than 50 years of age, this may be less of a response to current instructional practices with videos where teachers are building in interactivity and discussions, and more of a sad reminder of their own school days watching grainy filmstrips and out of date documentaries during class time.

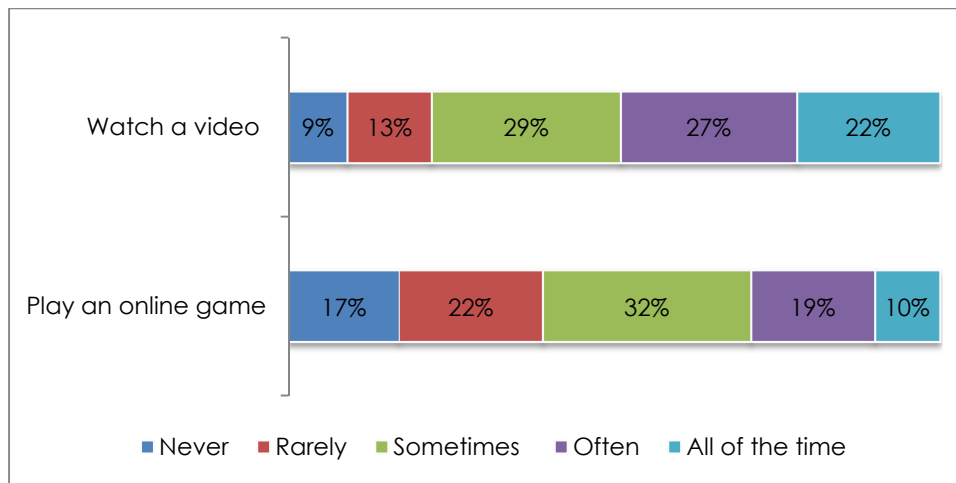
Students' self-directed uses of pixel content beyond the classroom

In addition to in-school use of videos, games, animations and simulations, students are also using these same tools outside of school to self-direct learning beyond the sponsorship of their teachers. As reported in previous Speak Up reports, today's students are increasingly exhibiting "free agent learning" behaviors where they are tapping into digital tools to explore academic interests, curiosities and future careers online. A majority of middle school (54 percent) and high school students (50 percent) note that they are "learning important things for my future on my own outside of school." Within that realm of self-directed, digital learning, videos and games as well as visually oriented social media feature prominently.

When asked about how they were engaging with learning outside of school but not related to homework or assignments, the students indicated a high level of regularity with using videos to learn how to do something or playing an online game or virtual simulation activity. Figure 2 documents the frequency of these activities for students in grades 6-8.

Over three-quarters of middle school students (78 percent) are tapping into online videos, and 6 out of 10 (61%) are playing online games, all in service of various types of self-directed learning goals. The students' perspective on the best way to explore careers may provide some explanation as to the value associated with these kinds of digital learning activities.

Figure 2: Frequency of selected self-directed digital learning activities by students in grades 6-8



© Project Tomorrow 2016

While taking field trips to see jobs and careers in action is the students' first choice for career exploration activities, 50 percent of the middle school students say watching a video about different jobs would be highly effective as well. Additionally, 43 percent of the students would like

to play an online game about different careers to learn more about those professions, and 39 percent believe that they can learn about different jobs and careers through social media tools as well.

"I believe that in 2020 all of my classes will have online resources, and be almost completely digital. We will still attend school and interact but it will not be on paper, it will be on the computer. We will be able to find our own resources to learn from as well as what the teacher gives us"

Male student, 10th grade, Virginia

Deeper Look: Visually based social media

Students' use of social media outside of school for personal interests also supports this idea that today's students are particularly interested in pixel oriented content and using engaging, interactive and visual tools to learn about the world around them. As is well documented in other reports, students' use of specific social media properties is a fast moving target. The tool of choice today may quickly fall out of favor tomorrow. As the Speak Up research has been reporting on students' social media use since 2003, we have had a front row seat on the dynamic nature of this

space. Key findings around students' differentiated use of social media today provides educators, policymakers and researchers with new insights into the pervasiveness of social media tools within students' rich media lives, and how visually based tools play a particularly strong role.

The Speak Up surveys poll students in middle and high school on the frequency of their usage of various social media tools. Additionally, as standard practice we examine that resulting data through several lenses including by gender. Several interesting patterns emerge from this analysis of the fall 2015 data from high school students. Across the board, high school students are using a wide range of different social media tools to explore their world, communicate and share with friends and family, and be engaged in topics of interest to them. However, differences exist between boys and girls when comparing the frequency of their usage as documented in Table 3.

Table 3: High school boys and girls – frequency of usage of visually based social media tools

Social Media Tool	Never/Rarely		All of the time/Often	
	Boys	Girls	Boys	Girls
Facebook	51%	46%	31%	38%
Instagram	36%	21%	49%	68%
Pinterest	85%	51%	7%	31%
Twitter	57%	50%	29%	39%
YouTube	8%	9%	78%	71%
Online games/apps	33%	45%	45%	32%
Massively multiplayer online games (MMOG, MMORPG)	39%	80%	28%	7%

© Project Tomorrow 2016

FROM PRINT TO PIXEL: **The role of videos, games, animations and simulations within K-12 education**

More girls are engaging with the heavily visually oriented tools of Instagram and Pinterest than their male classmates are. Comparatively, the boys are more likely to interact with the online games and multiplayer games. While the online games and multiplayer games are also visual in nature, they also represent a more action-oriented visual environment than either Instagram or Pinterest. While students' share a common interest and valuation on pixelated content, both in school and out of school, it is important to note that even with that category of visual content, students may be more or less interested in the use of certain types of media. As we have noted with other Speak Up findings, one size does not fit all when we discuss students' interests in digital tools for learning or connecting with the world around them.

"Students would learn faster and more efficiently through technology use consisting of social media messengers, online videos and step-by-step formats given on google. I believe those learning methods can show a path that's much easier for visual learners, including those with creative minds too."

Female student, 10th grade, Guam

Ending Thoughts

The pervasiveness of visually based learning content in our workplaces, our homes and our schools cannot be denied. We use videos to teach us how to make that special Sunday roast as well as to learn about NASA's plans for Mars exploration. Simulations and animations can help a teenager learn the basics of acceleration and braking before getting behind the wheel of

Mom's new Lexus. They can also help students struggling with physics to visualize and thus, better understand Newton's First Law of Motion. Games are preparing our military to be able to identify enemies, especially in hostile territories at night where vision is obstructed; games are also teaching third graders to identify geometric shapes and calculate the perimeters of those shapes. Given that scientists say that human brain processes visuals 60,000 times faster than textⁱⁱⁱ, it makes sense that in this information-intensive economy and society, content that is visual in nature is gaining widespread usage at a very rapid rate.

Our students see the future of education as being heavily oriented to visual learning also. Mobile devices, online learning environments and powerful digital content such as videos, games, animations and simulations will enable the visual learning paradigm. The insights of today's students about the school of tomorrow provide a compelling way to start new discussions about visual learning and to plan for the expectations of tomorrow's students. On the Speak Up 2015 surveys, students were asked, "What will school be like in 2020?" The following quotes provide a snapshot of the students' views on the future of learning.

"Five years from now, everyone will be using tablets and technology every single day. Students play online games to study. Students will also have a class blog, so if they have question, they can get help. Five years from now, we use technology every day in school."

Male student, 8th grade, Texas

FROM PRINT TO PIXEL: The role of videos, games, animations and simulations within K-12 education

"I think that in the future there will be more videos of class notes/discussions for students to rewatch. Though PowerPoints are available online, having the class itself videoed would help the students be more successful, providing them with further ways to learn the materials on their own time."

Female student, 12th grade, Illinois

"I think in the future more and more students will be able to learn better because of the use of technology. They will just have to watch videos to help them understand what they are learning. I think everything will be done online. Maybe the students won't even use paper and pencils, but tablets and laptops."

Female student, 8th grade, Arizona

"I think technology will be used more, as in the form of more virtual simulations, and online classes. Virtual simulations are cleaner, as well as greener, but real, say science experiments, create waste that isn't always environment friendly. School in physical form could be shorter because more people would have access to the internet and be taking more online or virtual classes."

Female student, 7th grade, Wisconsin

As the use of these pixelated tools expands in our schools, there are new challenges on the horizon that education and policy leaders will still need to address. Teachers are very interested in professional development on how to use the tools effectively. In turn, schools are exploring different modalities for teacher training that can provide a more relevant context for their usage in the classroom; i.e., using videos to teach teachers about using games to help their students develop math proficiency and critical thinking skills. Student data privacy remains a serious issue. This increased emphasis on digital learning in school is shining a brighter light today on the need to address the quality of students' out of school

connectivity and access. Despite these challenges, or maybe in support of them, there is a new sense of urgency today within schools and districts to leverage technology more effectively to address both student learning outcomes and college/career preparation. Just as with the evolution of education delivery mechanisms over time, the use of pixel-based content, so pervasive in our society already, provides a golden moment to re-think and re-engineer our vision for education, classroom instructional practices and our support for students' self-directed learning experiences. The time is now.

About Project Tomorrow and Speak Up 2015

Speak Up is an initiative of Project Tomorrow®, the leading global education nonprofit organization dedicated to the empowerment of student voices in education. Each year, the Speak Up Research Project polls K-12 students, parents, and educators about the role of technology for learning in and out of school. This survey represents the largest collection of authentic, unfiltered stakeholder voices on digital learning. Since fall 2003, almost 4.5 million K-12 students, parents, teachers, librarians, principals, technology leaders, district administrators, communications officers, and members of the community have shared their views and ideas through Speak Up. K-12 educators, higher education faculty, business, and policy leaders report that they regularly use the Speak Up data to inform federal, state, and local education programs.

In fall 2015, Project Tomorrow surveyed 415,686 K-12 students, 38,613 teachers and librarians, 4,536 administrators, 40,218 parents and 6,623 community members representing over 7,600 public and private schools and 2,600 districts. Schools from urban (25%), suburban (40%), and rural (35%) communities are represented. Just over one-half of the schools (58%) that participated in Speak Up 2015 are Title I eligible schools (an indicator of student population poverty). The Speak Up 2015 surveys were available online for input between October 1st and December 18th, 2015.

The Speak Up surveys included questions about the use of technology for learning, 21st century skills and schools of the future, as well as emerging technologies (online learning, mobile devices, and digital content), the use of technology within specific curricular areas, and STEM career exploration. In addition, educators shared the challenges they encounter integrating technology into classroom instruction, and how budget challenges have affected these decisions. The data is collected from a convenience sample; schools and districts self-select to participate and facilitate the survey-taking process for their students, educators, and parents. Any school or school district in the United States (or worldwide) is eligible to participate in Speak Up. In preparation for data analysis, the survey results are matched with school level demographic information, such as Title I status, school locale (urban, rural, and suburban), and ethnicity selected from the Core of Common Data compiled by the National Center for Education Statistics (<http://nces.ed.gov/>). Speak Up data is cross-consulted with NCES statistics to ensure that data represent nation-wide school demographics. The data are analyzed using standard cross-tabulation analysis.

For additional information on the Speak Up methodology, please contact the Project Tomorrow research team.

-
- i. <https://www.youtube.com/yt/press/statistics.html>
 - ii. <https://www.superdataresearch.com/blog/us-digital-games-market/>
 - iii. Walters, E., and Gioglia, J., The Power of Visual Storytelling



SPECIAL THANKS TO OUR SPEAK UP 2015 SPONSORS

Blackboard



ABOUT PROJECT TOMORROW

Project Tomorrow® is the leading global education nonprofit organization dedicated to the empowerment of student voices in education. With 20 years of experience in the K-12 education sector, Project Tomorrow regularly provides consulting and research support about key trends in K-12 science, math and technology education to school districts, government agencies, business and higher education.

The Speak Up Research Project annually polls K-12 students, parents and educators about the role of technology for learning in and out of school and represents the largest collection of authentic, unfiltered stakeholder voice on digital learning. Since 2003, almost 4.5 million K-12 students, parents, teachers, librarians, principals, technology leaders, district administrators and members of the community have shared their views and ideas through Speak Up.

15707 Rockfield Blvd., Suite 250
Irvine, CA 92618 | 949-609-4660

For more information,
please visit us at:
www.tomorrow.org

We can also be found at:
twitter.com/SpeakUpEd or
Facebook.com/speakuped

To download the report, please visit:
www.tomorrow.org/speakup/pdfs/SU15AnnualReport.pdf