



THE ILLICIT INTERNET

Leveraging Advanced Technology for Student Safety

The prevalence of online pornography has been a threat to a child's virtual environment since the onset of the World Wide Web. As the fabric of society's underlying network has moved steadily towards a web-based form of interaction, this has created a dilemma for child development. The introduction of the Children's Internet Protection Act (CIPA) in 2001 brought this dilemma to the forefront of K–12 education, spurring many companies to take on this challenge. Gaggle continues to tackle the challenge of an ever-changing digital landscape of inappropriate material and questionable communication being sent using 21st century learning tools and applications.

HISTORY

While the depiction of the naked human form has existed since prehistoric times, its prevalence in society as well as our response to it has fluctuated much throughout history. For example, whereas Roman society once accepted depictions of erotica, the Victorian age first formulated the modern concept of pornography and enacted the first law criminalizing it, the Obscene Publications Act of 1857 in the United Kingdom.

Also consider pornographic film. First introduced in 1896 and once confined to underground amateur productions in the 1920s, the adult film business has exploded in the 21st century into a booming business, with studies from 2006 estimating over \$13 billion in revenue in the United States alone.

Today, we find ourselves immersed in a society where even mainstream media has become more sexual, with commercials for products like erectile dysfunction medication, lubricants and condoms common on daytime and primetime television and radio, as well as being all over the Internet.

There is no denying that technology has played a large role in increasing access to illicit materials. What once required expensive, bulky film cameras to produce, can now be done by anyone owning a digital camera or even a mobile phone. Distribution used to be through magazines wrapped in brown paper delivered to your mailbox, or a visit to a seedy theater/shop in a questionable part of town, and required proof of being at least 18 years old.

But with instant access to videos on pay-per-view television, or with any device that connects to the Internet, consumers can access pornography quickly and easily from their own home, including from the bedroom of the average North American youth.

To get some perspective, in 2003, there were 1.3 million pornographic websites, totaling over 260 million pages of content (N2H2, 2003; from safefamilies.org), and in 2007, a Canadian study reported 90% of males and 70% of females aged 13–14 had accessed pornography at least once (*TopTenReviews.com*).

Professional pornography is a booming business. But the increase in ubiquitous access to mobile devices with powerful cameras and video recorders has made amateur pornography, including child pornography and “sexting,” even more popular. According to the University of New Hampshire’s Crimes Against Children Research Center, 2.5% of the 1,560 10–17 year olds surveyed had actively participated in sexting, defined as appearing in or creating images or videos via cell phone or the Internet. Moreover, the number of teens actively or passively sexting, meaning either appearing in, creating, or receiving images, nears 10% of all teens.



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Sexting effects nearly 10% of all teens.

RESPONSE AND CHALLENGES

In response to the easy access to inappropriate materials, the Children's Internet Protection Act (CIPA) was created in 2001, requiring schools to implement technology protection measures that block or filter Internet access to pictures that are obscene or harmful to minors. Various companies have created ways to filter or block pornographic images to meet these requirements, with varying levels of success. Web filtering software is commonly used to prevent users from viewing certain websites. While they can be successful, they often come with the highly frustrating tradeoff of frequently blocking legitimate websites. Visiting websites is not the only activity happening either, as email, chat rooms, social networks, instant messaging, and video chat have become more ubiquitous methods of communication. These tools also fall under CIPA and need to be filtered or blocked.

Email for students was one of the first online technology tools schools wanted to implement, but fear of inappropriate use caused concerns about student safety and potential liability. Email companies answered with ways to control whom students could email, what they were allowed to say, and what kinds of attachments or images they could send.

Preventing pornographic images in email was also needed, but this task proved more complicated and difficult than text blocking. Most providers of student email answered this with a complete denial of any messages containing images or with attachments. This drastic solution led to a great deal of frustration as perfectly innocent images were quarantined in some inaccessible folder, or were sent to teachers who would have to individually review every email and decide whether it could be delivered or not.

Adding to both the importance and difficulty of screening email for inappropriate images, there was an influx of amateur photography with the popularity of mobile devices with built-in cameras. One estimate set the number of photographs taken around the world in 2011 at 375 billion. Users of Instagram upload 5 million photos every day. Today's youth have grown up taking their own photos from an early age, documenting and sharing almost every event in their lives.

THE GAGGLE SOLUTION

Early on, Gaggle realized a better system needed to be developed so students and teachers could enjoy the full benefits of electronic communication. It was imperative that inappropriate images be kept from students, but putting teachers in a position of having to review every single image wasn't a viable solution. That would technically meet the requirements of CIPA, but put an unbearable workload on educators. Thus, Gaggle introduced an Anti-Pornography Scanner (APS) to handle an initial screening of all images, reducing the workload for educators, as well as their frustration.

The challenge from the beginning was to create a solution that could scan and analyze images accurately. Yet, much of the analysis of images is highly subjective and dependent not only on the content but the context of the picture. Merely creating software that could recognize flesh tones in the pixels of a photo was not enough, as that would result in blocking not only images containing nudity, but also common close-up photos of people. So almost as important as blocking bad content

was keeping false positives to a minimum. Achieving this required the utilization of machine learning technology, which could learn through a training process on how to recognize patterns in both inappropriate images as well as innocent ones.

The training process for the Gaggle APS requires a large collection of images already identified as either inappropriate or innocent, and accuracy depends on how well the choice of images represents reality. Because the majority of readily available inappropriate images tends to be professional photographs, the ever-increasing amount of lower quality amateur images taken with personal digital cameras and mobile devices presented a new challenge. An additional challenge to developing accurate filters is presented by the subjectivity in determining what is and isn't appropriate. This is generally determined by the society one lives in, but even within our own United States can vary greatly based on geography, culture and religion.

Certainly, it can be agreed that depictions of naked people engaged in sexual behavior qualify, but what about an image showing a skimpily clad woman in a suggestive pose? Or fully clothed adults simulating sexual activity?

The APS gives school districts the highest degree of CIPA compliance, providing the peace of mind administrators need as they strive to provide technology-rich environments to their students. Combined with the highly-effective Human Monitoring Service, school districts stay ahead of cyber safety while removing the burden of monitoring blocked content. Gaggle also recognizes that many districts are already committed to using some other popular communication services, so districts can choose integration options for Google Apps for Education or Microsoft Office 365, making the benefits of their Anti-Pornography Scanner and Human Monitoring Service widely available within K-12 education.



9,478,110

email messages were sent during
the 2013–2014 school year



296,045

images were posted to the Social Wall
during the 2013-14 school year

SUMMARY

Pornography may have a permanent place in history, but it doesn't belong in our schools. Today's students are immersed in technology, and fearlessly consume and create visual content, but they are still children. It is not appropriate to allow unrestricted communication and internet access in our classrooms simply hoping they won't be exposed to something pornographic while touting digital citizenship as part of the curriculum.

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