Leveraging TikTok and other new media for optics educational outreach

Cory S. Boone*[a]
[a]Edmund Optics, 101 E Gloucester Pike, Barrington, NJ, USA 08007

ABSTRACT

New media, like the video-sharing application TikTok, are powerful tools for optics education and outreach on a large scale. Public optics outreach is crucial for spreading awareness of the industry and developing the workforce that will tackle the photonics challenges of tomorrow. This paper will cover the strategies that Edmund Optics used to build and scale a company-sponsored optics educational outreach TikTok program that currently has over 35,000 followers and receives up to 2 million views per video. The benefits of launching such a program for any company, educational institution, or national lab and key selling features to get executive buy in are also discussed. Additional benefits to launching such a program include the development of employee/student communication skills, brand awareness both inside and outside of the photonics industry, and improving brand image. With 1.4 billion global users, TikTok presents a promising platform for simultaneously reaching a large audience while targeting people who have demonstrated an interest in STEM topics. Sharing the outreach content made on TikTok across professional platforms like LinkedIn also leads to industry awareness, respect, and collaboration outside the scope of the common perception of TikTok as a casual, business-to-consumer medium. Meeting students, parents, and communities on the platforms they already use greatly simplifies building an audience for educational content. The Edmund Optics TikTok program was started as an experiment during school closures caused by COVID-19 but has now cemented itself as an integral part of the company's larger outreach program.

Keywords: outreach, video, new media, education, digital, marketing

1. INTRODUCTION

Optics educational outreach is critical for spreading awareness of the photonics industry, inspiring a passion for optics in young people, and developing the labor force that will solve tomorrow's photonics challenges. In an increasingly-digital world, optics outreach programs can both reach a larger audience and increase audience interaction by leveraging newer digital channels of communication. While in-person visits to students are memorable and will always have a place in educational outreach, reaching students on the digital platforms where they already spend much of their time can significantly scale up an outreach program. TikTok, a video sharing platform first created in 2016, is a wildly popular app, especially in younger demographics. Edmund Optics built a TikTok program as an extension of an already established outreach program and was able to quickly grow it so that it reached millions of people both on and off of the TikTok app.

2. WHY USE TIKTOK?

2.1 Large Global User Base

One of the main reasons to create educational video content on TikTok is the widespread use of the app. As of March 2022, TikTok had 1.4 billion users worldwide, which accounted for 27.9% of global internet users[1]. The global user base of TikTok has grown significantly over the last several years, increasing from 812 million users in March 2021 to 1.4 billion one year later (see figure 1). The age demographics of TikTok are also skewed towards younger ages with 32.5% of users between ages 10-19 and 29.5% of users between ages 20-29, as of July 2022[1]. These younger users are often the primary audience for educational outreach efforts. There are, however, still significant numbers of users ages 30+ as well (see figure 2), and reaching these audiences is also beneficial for spreading an awareness of the photonics industry.

Optics Education and Outreach VII, edited by G. Groot Gregory, Anne-Sophie Poulin-Girard, Proc. of SPIE Vol. 12213, 122130M
© 2022 SPIE · 0277-786X · doi: 10.1117/12.2646001

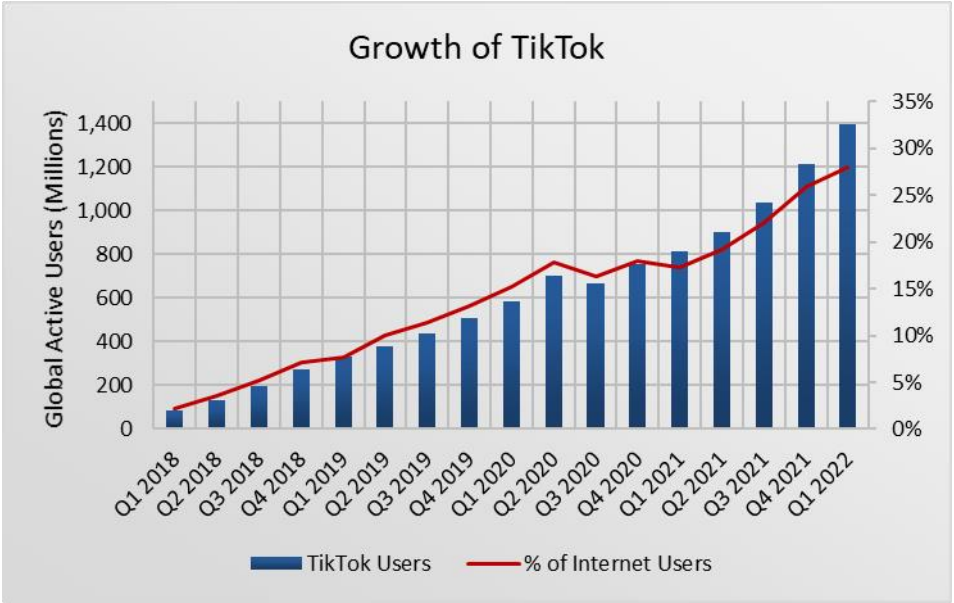


Figure 1. The number of global TikTok users has significantly grown over recent years, reaching 1.4 billion users at the end of Q1 2022[1].

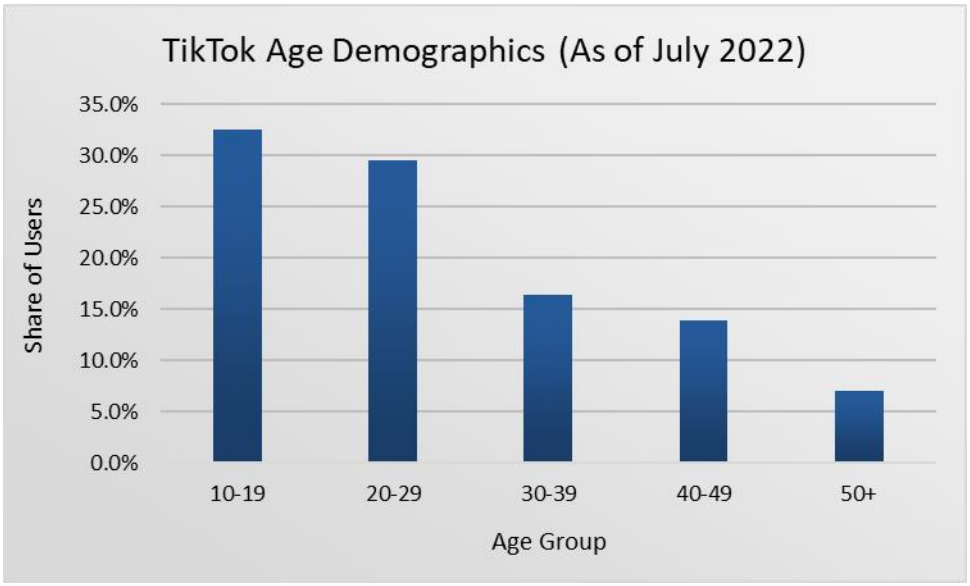


Figure 2. The user base of TikTok is skewed towards younger audiences[2].

2.2 Additional Benefits

There are several other reasons to develop a TikTok program as a part of a larger optics outreach effort. All of the key benefits of such a program can be summarized as:

1. Meeting your audience where they already are
2. TikTok features a simple recording and editing interface
3. Videos created in the app can be leveraged on other platforms (LinkedIn, YouTube, Facebook, Instagram, etc.)

The intuitive tools for recording video clips, trimming their duration, adding any desired additional text or animations, and incorporating background songs make TikTok an easy way to generate video content tailored for viewing on mobile devices. One of the large appeals of the app is that the video content is not overproduced, as there is less of a separation between creator and audience compared to other video sharing platforms like YouTube.

The videos created in TikTok can be saved and shared across other channels, reaching audiences that do not use TikTok but interact through other digital channels. Edmund Optics has found success sharing TikTok videos across LinkedIn, Facebook, and Instagram. Sharing TikTok content on LinkedIn to reach a more professional audience will be described in more detail in Section 5.

3. GETTING LEADERSHIP BUY-IN

3.1 Key Selling Points for Getting Executive Buy-In

While the interface of TikTok is intuitive and videos can be made relatively easily, it still takes time to come up with ideas, shoot, and edit. Leadership buy-in is critical for developing an organization-sponsored TikTok outreach program, otherwise leadership may not approve of time on the job, or at the educational institute spent on such a program instead of spent on other projects. Some of the key selling features that can be used to convince organizational leadership of the importance of a digital, video-based outreach program include:

1. Development of employee/student communication skills
2. Brand awareness both inside and outside of the industry
3. Improving brand image
4. Building a future workforce

In order to speak intelligently about an optical concept, program participants need to truly understand it and learn how to articulate it without hiding behind jargon. Speaking in these videos also helps develop presentation skills, even if there is no live audience while the videos are recorded. Reaching young audiences on TikTok helps spread awareness of the photonics industry and your company, and young people often also share some of their favorite videos with their parents and others in their communities. The extended social group around young TikTok viewers may include potential employees and customers. Sharing the TikTok content on LinkedIn can even further expand the audience of potential employees and customers while improving brand image among peers in the industry.

4. TYPES OF VIDEOS

There are many available resources for how to navigate the TikTok app itself, so this guide will instead focus on the types of videos that proved to be successful for Edmund Optics' TikTok program, both on TikTok and on other platforms like LinkedIn.

4.1 Greenscreen Videos

The first type of video tested in Edmund Optics' TikTok programs were videos explaining an optical concept, technology, or news story using the apps built-in Greenscreen effect. Topics ranged from "why the sky is blue", to "how laser tattoo removal works", to "the strongest laser in the world" (see video 1). Images were displayed behind the presenter to illustrate the concepts they are describing. This is a simple way to convey essentially any idea. Whenever the video creators were not sure what to create a video about, an internet search into facts about light, space, technology, or other related areas often uncovered promising topics for Greenscreen videos.

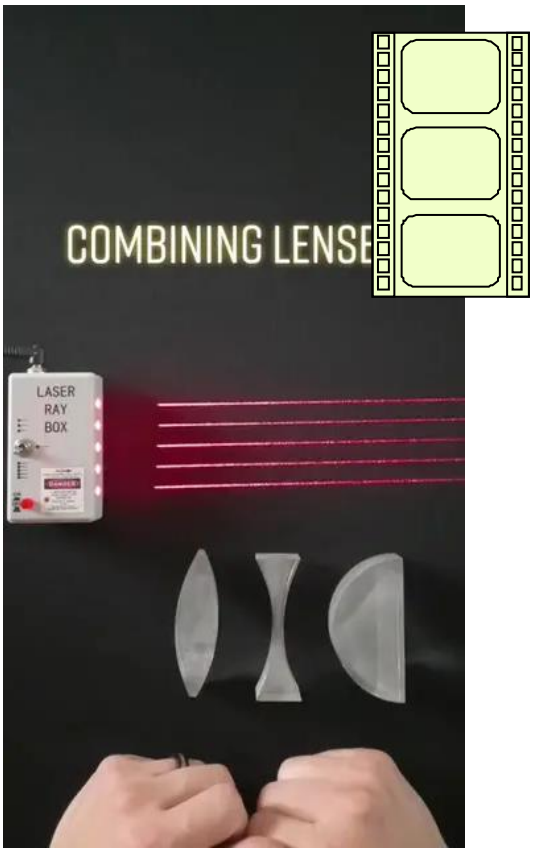
Video 1. This Greenscreen video explaining the strongest laser source in the world was an early success of the Edmund Optics TikTok program and has 137,800 views as of August 1, 2022: http://dx.doi.org/10.1117/12.2646001.1

The steps for creating a Greenscreen video are:

1. Identify the topic and create a script.
2. Download online images that would illustrate the topics described in the script.
3. Then take screenshots of the downloaded images while holding your cell phone vertically. If this step is not done, the presenter can only show themselves within the bounds of the image. For example, in the thumbnail of video 1, the presenter's body extends below the image in the middle of the screen, filling the bottom of the frame. Using the downloaded image rather than a screenshot of it would confine the presenter to only showing up inside the middle rectangle of the screen containing the background image.
4. Record separate video clips for each Greenscreen background
5. Edit the clips as desired to trim their duration and add text, background music, animations, or captions.

4.2 Overhead Demo Videos

While Greenscreen videos were the foundation of the Edmund Optics TikTok program, Overhead Demo videos proved to be the most popular video type, earning up to 2 million views per video. These videos make use of a kit containing a laser source and several different types of lenses, prisms, windows, and mirrors. The specific kit used is sold by Arbor Scientific and is referred to as "Laser Ray Box and Lenses"[3]. This kit can very clearly demonstrate concepts such as refraction, reflection, total internal reflection, and basic optical setups. Mounting the cell phone used to create the TikToks above the kit allow for the presenter to use both hands to conduct the demonstration while keeping the phone's camera steady (see video 2).



Video 2. This Overhead Demo video explaining how different types of lenses can be combined follows the style that has proved to be the most successful for the Edmund Optics TikTok program and has 1.6 million views as of August 1, 2022: http://dx.doi.org/10.1117/12.2646001.2

The steps for creating a Greenscreen video are:

1. Identify the topic. A script may not be needed if the speaker is comfortable speaking to how the optics manipulate the laser beams.
2. Record separate video clips for each overhead shot. Sometimes these videos were shot as a single take.
3. Edit the clips as desired to trim their duration and add text, background music, animations, or captions.

4.3 Additional Video Types

The two video types described above are the most common styles used by Edmund Optics and are typically the most successful, but several other video types are also used including:

1. Duet, or Response, videos: the Duet feature of TikTok allows the creator to respond to an already-existing video, posting a new video side-by-side with the original. This can be used to respond to content from other TikTok channels and initiate conversations. Edmund Optics occasionally makes this type of video to add on to videos of laser cleaning or other applications.
2. Demos that do not follow the Overhead video style: not all demonstrations of how optical components work need to follow the Overhead video style described in Section 4.2. Fresnel lenses can be used to show how they focus light sources, cylinder lenses can be shown turning laser beams into laser lines, and singlet lenses can be held up to the phone camera to show how they invert images.

3. Culture videos: rather than teaching optical concepts, some videos can also be made to show the culture of your organization, such as what a day in the life of your role is like.

5. SHARE ON OTHER CHANNELS

5.1 Expand Your Audience Beyond TikTok

As mentioned earlier, TikTok reaches a broad audience but the reach of an organization-sponsored video outreach program can be further expanded by sharing the video content created on TikTok across other channels. Especially since the TikTok user demographics skew toward younger audiences (see figure 2), sharing the videos created on TikTok on LinkedIn can help reach older, likely more professional audiences. Sharing TikTok content on LinkedIn not only teaches LinkedIn users about the concepts covered in the videos and provides entertainment, but it both increases your organization's technical credibility and brand image.

While the concepts covered in an educational outreach program's TikTok videos may not be highly technical, explaining optical concepts in simple terms that anyone can understand demonstrates that the presenters truly understand the concepts. Many professionals involved in optics have an educational and professional background in areas other than optics such as mechanical engineering, biomedical applications, or electrical engineering, so these audiences could also benefit from educational content focused on optics fundamentals.

Also, showing that your organization prioritizes and invests in creating educational outreach content establishes good faith with viewers on other platforms like LinkedIn, especially if they are also passionate about STEM education. It shows that your organization cares about education. Sharing TikTok content on LinkedIn can lead to opportunities to collaborate with other organizations on optics outreach and even lead to business opportunities.

In addition to LinkedIn, the video content created on TikTok is ideal for sharing on Instagram, Facebook, YouTube, and other platforms in which video can be shared.

6. CONCLUSIONS

The shift to students spending more and more time on digital platforms does not necessarily need to be a detriment to optics educational outreach efforts; those same digital platforms can be leveraged to meet students where they are already spending their time. An organization-sponsored TikTok outreach program can educate the photonics labor force of tomorrow while also improving your own brand image in the industry. The best practices shared here can hopefully help more outreach programs utilize TikTok and other media, and the skills gained making this content will benefit other efforts in the constantly-evolving digital landscape. A TikTok outreach program could be a valuable addition to existing in-person outreach efforts.

REFERENCES

[1] Iqbal, M., "TikTok Revenue and Usage Statistics (2022)." Business of Apps, (30 June 2022), https://www.businessofapps.com/data/tik-tok-statistics/
[2] Doyle, B., "TikTok Statistics – Updated July 2022." Wallaroo Media, (14 July 2022), https://wallaroomedia.com/blog/social-media/tiktok-statistics/
[3] Arbor Scientific., "Laser Ray Box and Lenses." Arbor Scientific, (2022), https://www.arborsci.com/products/laser-ray-box-and-lenses