Edtech

for the K-12 Classroom

ISTE Readings on How, When and Why to Use Technology

Instructor's Guide

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ISTE®

How do you get preservice teachers excited about being part of the profession? A great first step is to encourage them to participate in a professional organization. As teacher educators, we must help our graduates expand beyond their roles in the classroom and help them define themselves as professionals and leaders. Membership organizations offer the support, advice and resources that will not only help our future teachers grow and keep them engaged in their careers, but also strengthen the profession as a whole.

That's why instead of purchasing a textbook this term, my students are joining the International Society for Technology in Education (ISTE). I'll be supplementing student coursework with the ISTE readings and videos published in *Edtech for the K-12 Classroom* and helping them take advantage of other resources like the ISTE Professional Learning Networks (PLNs) so they can begin to build a community of global peers.

Joining a professional organization like ISTE has several advantages over textbooks:

The resources stay current. Whether it's a blog post, a conversation in the PLNs or a new issue of the magazine, the information is fresh and topical.

They're affordable. As the cost of textbooks continues to skyrocket, ISTE membership for students is an affordable alternative.

They boost resumes. Being engaged in a professional organization signals to employers that this candidate is dedicated to lifelong learning and professional growth.

They provide personalized PD. Students can pick and choose the areas they want to explore – whether it's using virtual reality in the classroom or finding the best strategies for meeting the needs of students with disabilities.

The resources have broad application. The ideas, strategies and resources will help students succeed in all their courses.

They help professors, too. When searching for resources to share with students, you just might find some helpful ideas and strategies for yourself.

They make your program look good. Membership in professional organizations also helps higher education programs demonstrate that our students are connected to a global community of teachers.

Finally, encouraging students to join a professional membership organization like ISTE supports the four guiding principles from the U.S. Office of Educational Technology:

1. Focus on the active use of technology to enable learning and teaching through creation, production and problem-solving.

2. Build sustainable, program-wide systems of professional learning for higher education instructors to strengthen and continually refresh their capacity to use technological tools to enable transformative learning and teaching.

3. Ensure preservice teachers' experiences with educational technology are program-deep and program-wide, rather than one-off courses separate from their methods courses.

4. Align efforts with research-based standards, frameworks and credentials recognized across the field.

How to use the ebook

Edtech for the K-12 Classroom organizes resources into seven categories: ISTE Standards, Support & Community, Personalized Learning, Digital Citizenship, Digital & Media Literacy, Digital Equity and Digital Learning Lessons & Resources. In this instructor's guide, I will address these topics with an emphasis on how they overlap with the ISTE Standards for Educators.

You'll notice that I don't mention each resource in the ebook. I've chosen a few that interest me most, which I'll supplement with other resources that I feel are important. You may want to approach your use of these materials differently, but I hope by sharing my approach, I might give you some ideas. I invite you to share your ideas in the ISTE Teacher Education Network.

ISTE Standards

For the purpose of this book, I'm going to focus on the ISTE Educator Standards and assume that most students are already familiar with the ISTE Standards for Students through their other coursework. If they aren't well versed in these standards for digital age learning, they need to be. Future employers will likely expect students to be engaged with the ISTE Standards for both students and educators, and also be familiar with ISTE's Administrator Standards to understand what is expected of leaders and to work toward professional advancement if they are aiming for a leadership role in the future.

Why are these standards so important? Because educators must use technology with purpose. Aligning lessons to the Student Standards and making time to address the Educator Standards as well as ensuring that each lesson addresses at least one content standard will ensure that technology is being used deliberately and with intention, not just for technology's sake.

In the Digital Learning & Lesson Resources section of the ebook, you'll find an article on the TPACK model. It's a good discussion starter for the purposeful implementation of technology.

Before we get to the activities associated with the ISTE Standards section, consider viewing these two videos to help refresh your students on the Student and Educator Standards and prompt a discussion:

> Video: 7 Ways: The ISTE Standards for Students

> Slideshare: Stretch Your Edtech Practice: Breathe into the ISTE Standards for Educators

Regularly talking about the ISTE Standards is the best way to help make them part of your students' repertoire. Encourage students to follow ISTE on social media, which will also help to reinforce these ideas.

Try these activities

Draw a picture

This activity is modeled on K.D. Finson's Draw a Scientist research. Have your students draw an educator who is meeting the ISTE Standards for Educators to represent the skills.

Engage preservice teachers in a discussion about the ISTE Standards for Students and their own teaching experiences.

In small groups, consider these questions:

- When you were a student, were you prepared to meet all of the ISTE Standards?

- Which ones did you meet? Which ones didn't you meet?

- How did your teacher help you meet the standards?

- What kind of things did the teacher do that kept you from using technology in a meaningful way?

- Ten years from now, do you expect these to be a valid picture of an effective technology-using teacher?

- Think back to your favorite technology-using teacher. How would you explain him or her to your group? What made him or her great?

- Did you ever have a teacher who had a "bad attitude" toward technology? How did you know it? What did they do?

References

Finson, K. D. (2002). Drawing a scientist: What we do and do not know after fifty years of drawings. School science and mathematics, 102(7), 335-345.

Support and Community

One of the most important goals of a formal teacher education program is to prepare students to enter the profession. It's not only about teaching professional practice, but also about helping future teachers find communities that will combat feelings of isolation. This reminds me of some of Ertmer's (1999) work about improving teacher practice through connections via technologies and the Paulus & Schref (2008) study on reducing teacher isolation.

The selections included in this section of the ebook will introduce some terminology and different kinds of communities students can be a part of. For example, the video "Sarah Thomas on Building a Personal Learning Family" will help students better understand the benefits of a professional learning network. If you look up Sarah Thomas on Twitter (@Sarahdateechur), you'll see she's part of many professional networks like Edumatch, which pairs inservice teachers with preservice teachers for support. She's also very involved in Twitter chats.

Try these activities

Have Students Join a Twitter Chat

Twitter chats are a great tool for demonstrating the power of a social network to connect teachers. The article "40 Twitter chats worth your time" illustrates the variety of chats out there. If you don't personally participate in Twitter chats, you might be worried that the preservice teachers won't be well received. This is not true. The edtech Twitter community is overwhelmingly friendly, eager to help, supportive and dedicated to the profession. (Hey, they are doing a nighttime chat to improve their practice!).

If you've never participated in a Twitter chat, give it a try so you can become comfortable with this format yourself. A good place to start is with the #NT2T, a slower chat for teachers new to Twitter.

If you think your students aren't ready to jump on an existing chat, try organizing a simulated chat using Today'sMeet to get them comfortable with the format. Have students create and use a Twitter handle and begin by introducing themselves. Then, have them weigh in on two discussion questions you've selected.

Prior to the chat, they should read the article "Get the most out of Twitter chats" so they can learn some tips. Make sure they always use the chat hashtag and keep their tweets short.

Have students explore and report out what they find in ISTE PLNs

Once students activate their memberships, they can access the ISTE Professional Learning Networks. There are 24 ISTE PLNs, focusing on various topics such as STEM, digital equity, ISTE Standards and global collaboration. Others focus on job roles and experience level, such as teacher educators or young educators.

Students must log in to the website using their membership numbers, then click on "Membership" and select "Professional Learning Networks" from the drop-down menu.

Have students read the ISTE Community Guidelines. This is a great opportunity to reinforce digital citizenship and what it means to be a member of an online community. Talk about appropriate online behavior and how to participate in a community. Discuss leadership within group and the role of moderators.

After agreeing to the terms of service, students can sign up for as many PLNs as they want. Once they join a PLN, have students report to the class what the group offers. Here are two ways that can also help students show technology competencies.

Create an ad for your PLN

Use a tool such as Canva, Piktochart or Adobe Spark to create an infographic advertising the PLN group to their fellow students. Explain what resources are available and why they should join. This could also be done with a local ISTE affiliate if one is active in your area.

Create a video commercial

Just like creating an ad, making a video is a great way to get students thinking about the benefits of PLN membership. At the same time, they can learn video editing or brush up on their skills using tools like Movie Creator, iMovie, Adobe Spark Video or Clips.

You can use this as a writing activity by requiring a script, and you can teach them about planning multimedia projects by having them create a storyboard and engage in thoughtful planning. Once the video is done, students can upload the finished projects to Flipgrid and share them on Twitter.

ISTE Educator Standards addressed by these activities:

Learner. Educators continually improve their practice by learning from and with others and exploring proven and promising practices that leverage technology to improve student learning.

Collaborator. Educators dedicate time to collaborate with both colleagues and students to improve practice, discover and share resources and ideas, and solve problems.

Leader. Educators seek out opportunities for leadership to support student empowerment and success and to improve teaching and learning.

References:

Ertmer, P. A. (1999). Addressing first- and second-order barriers to change: Strategies for technology integration. Educational Technology Research and Development, 47(4), 47-61.

Paulus, T., & Scherff, L. (2008). "Can Anyone Offer any Words of Encouragement? Online Dialogue as a Support Mechanism for Preservice Teachers." Journal of Technology and Teacher Education, 16(1), 113.

Personalized Learning

Personalized learning is a key focus in the National Educational Technology Plan and is an important concept for students to grasp. Although it's a growing trend in education, many preservice students don't understand the precise meaning of personalized learning or similar terms. The article "Personalized vs. differentiated vs. individualized learning" in this section will prompt a great class discussion about what the different terms mean.

To go deeper into the topic, you might address how personalized learning relates to equity. Watch the video, "Personalize learning and empower students to change their stories" to stimulate a discussion about equity. This inspiring video also highlights student success stories made possible through the use of technology.

Try these activities

Exploring assistive technology settings

Show students assistive technology settings on computers and tablets, and have them brainstorm how they can use them to personalize learning for a student. Help students learn how to use these tools themselves (i.e. changing background colors when you have a headache or magnifying the screen to compensate for low vision). Many companies, like Apple and Microsoft, offer tutorials on their accessibility functions. Have students develop a plan for using these built-in features to help all students succeed in a regular classroom.

Create a graphic explaining personalized, differentiated vs. individualized

Ask students to use a website or app like Canva or Adobe Spark to create a graphic explaining the relationship between the three terms. Have students present their graphics to the class and explain them.

Students who are used to sharing their learning through essay writing might be uncomfortable creating a graphic. As part of the class discussion, ask your preservice teachers if they think certain types of students might enjoy this activity and discuss how this nontraditional explanation activity illustrates the difference between personalized, differentiated and individualized learning. Ask students to suggest revisions for the activity that will better show these types of learning.

Student choice assignment: Creating their own ebook

In our course, we use StoryDice or the StoryDice app to have students generate random story features and then create a custom book that tells a story. While the activity has preservice students thinking about making a book for a child, this activity would also allow K-12 students to create content that matches their interests and creativity.

Another idea is to have students use Book Creator to make a book of their choice and then have them characterize the assignment as personalized, individualized or differentiated. Find more Book Creator ideas here.

Explore student data

To reinforce the Analyst standard in ISTE Educator Standards, have students access de-identified reports from companies that create learning management systems for K-12 settings. Tools like Lexia and Renaissance Learning allow teachers to create dashboards that report on each students' ability to learn content and creates reports showing which students are at, above or below grade-level expectations. These snapshots allow us to engage preservice teachers in a discussion about the difference between personalized, differentiated and individualized learning. Have them brainstorm ways they might use data to help ensure that all students succeed in the classroom.

ISTE Educator Standards addressed by these activities:

Designer. Educators design authentic, learner-driven activities and environments that recognize and accommodate learner variability.

Analyst. Educators understand and use data to drive their instruction and support students in achieving their learning goals.

Digital Citizenship

Digital citizenship is an area where you as a preservice teacher educator and your preservice teachers will be most frequently called on to be role models. No one notices hypocritical behaviors faster than children, so it's important for us as teacher educators to challenge our future teachers to explore their own practice and model appropriate behaviors for their students.

The article "Proactive not protective! Digital citizenship should empower students" flips the perspective on digital citizenship by emphasizing the opportunities rather than the perils of the digital age. Interacting with your PLN in an appropriate way, citing sources and sharing resources are all ways to model positive digital age skills.

The article, "Find free and fair use photos" will be eye-opening for preservice teachers who are careful about plagiarism regarding their college papers but often don't understand that they can't grab online content and pictures for their projects. Helping future teachers learn how to use Creative Commons and model appropriate citation of online work is a great way to build appropriate modeling habits.

In the blog article, "A new take on cyberbullying," the author reminds our future teachers to think about students as people and teach empathy and equity. This article could be paired with resources from organizations like Common Sense Media and Teaching Tolerance to talk about the role of bystanders in bullying attacks. Both of these sites offer webinars for teachers that could supplement your curriculum and help prepare future teachers to address online safety. Common Sense Media's programs and curriculum are free to schools. Have your students explore and review these resources so they'll be ready to address digital citizenship and the issues that arise when students are not responsible digital citizens.

Try these activities

What would you do?

Cyber Dilemmas for Teens is literally a jar containing slips of paper describing online troubles. Students pick a dilemma and discuss what they would do in the situation. Designed for middle or high school students, preservice teachers can make their own for younger students or to reinforce specific issues at a school.

Technology storybooks

Using storybooks in your preservice teacher education program is a great way to integrate literacy, gain interest of your students who love books, and give examples of how technology topics can be taught when they may not have as much technology as they may like. Many storybooks focus on digital citizenship and can help young students think about how technology use makes them feel and how they can use it safely. I keep a curated Amazon list of storybooks that anyone can access.

Some of my favorites are the *Berenstain Bears Computer Trouble* where the family quits talking to each other because they get a computer. Another is *When Charlie McButton Lost Power*. This was the first book by Suzanne Collins (of *The Hunger Games* fame) and the fun illustrations help encourage students to discuss the importance of imagination and family when technology is not available.

Digital footprint

In this project, students in groups of three take turns being a principal/search committee chairperson and teacher job candidates. So if Student A is principal, then Students B and C are her top two candidates. The principal searches for the candidates on social media to see what they find, document it for the committee and make a recommendation for hiring. This activity provides several opportunities in class:

- Students gain practice writing a professional letter.

- Students think about the difficult choices involved in hiring teachers.

- Students explore the importance of their digital footprints at the pre-professional stage and correct it before being in the job market.

You can take this one step further by having your preservice teachers give each other advice about how to make their profiles better. Tips like posting pictures of their volunteer work can highlight their qualities as a future teacher. It also offers a jumping-off point to discuss school policies on taking and posting pictures of students.

Parent communication

Create a mock letter from a parent asking about an incident that happened at school, then ask your preservice teachers to write a response. Discuss with students what kinds of action they can promise based on typical school response policies. You can also obtain an actual Acceptable Use Policy from a local district and have students refer to it before crafting their response. It's a great way to familiarize your students with local education policy.

ISTE Educator Standards addressed by these activities:

Citizen. Educators inspire students to positively contribute to and responsibly participate in the digital world.

Designer. Educators design authentic, learner-driven activities and environments that recognize and accommodate learner variability.

Facilitator. Educators facilitate learning with technology to support student achievement of the ISTE Standards for Students.

Digital & Media Literacy

Fake news and media literacy are difficult enough for adults to understand, so it makes sense that future teachers may worry about teaching media literacy to children. That's why we need to talk to preservice teachers about the importance of being a co-learner. Content is changing so fast, it's a rare person who hasn't fallen — at least initially — for fake news. By letting our preservice teachers know that everyone struggles with this, we make our learning and thought process visible and invite them to do the same with their students.

In regular practice, it's good for us to check sites as suggested by the article, "Top 10 Sites to Help Students Check their Facts" and "Today's news Real or Fake." I keep a block of text available on my text editor that says: *Thanks for sharing this site with me on Facebook, but are you aware of Snopes where you can investigate if it's real or fake? This one is fake. Sorry to let you know.*

I spend time talking to my future teachers about our role in educating not just their students, but also the parents of those students. And make sure they know they have a great ally in their own school librarian. Librarians are an amazing resource when it comes to media literacy and are eager to help classroom teachers and young students learn how to be information literate. Consider inviting your college librarian to help design and/or teach this lesson to your students. The collaboration could give you some new ideas and help you to identify resources available to your students throughout their academic careers.

Try these activities

National Association of Media Literacy resources

Some of the best educational resources on fake news and media literacy come from the National Association of Media Literacy (NAMLE). Send students to the website to learn about their core principles and look at lesson

plans and resources in the Resources Hub. Have them report to the class ways they could these resources in their classrooms.

Preservice teacher debate

A classroom debate is a great way to engage your students in exploring their ideas about fake news or online sources. If you teach mixed-grade-level future teachers like I do, this will engage second social studies majors, for example, in a way that other activities may not, and you might consider having them take a leadership role.

Have students create videos, slideshows or graphics to integrate technology skills. More advanced tools like Piktochart would allow them to use data to make their case.

- Debate questions could be:

- Should students be able to use web resources in research projects?

- Is fake news a real thing?

- How does fake news affect public opinion and the future of our country?

ISTE Educator Standards addressed by these activities:

Citizen. Educators inspire students to positively contribute to and responsibly participate in the digital world.

Designer. Educators design authentic, learner-driven activities and environments that recognize and accommodate learner variability.

Facilitator. Educators facilitate learning with technology to support student achievement of the 2016 ISTE Standards for Students.

Digital Equity

Digital equity can be a tough topic for future teachers and even for teacher educators. Personally, I often worry that I might say the wrong thing or that I'm not aware of the issues that I should be because I'm not in a K-12 setting or because of my own cultural bias.

Having students explore their privilege and think about the opportunities that led them to college is a good way to get them thinking about these issues. Ask them to reflect on their early computing experiences or whether they had access to enrichment programs to get them thinking of advantages or disadvantages they've had. Encourage them to think about how their students will be expected to use technology as adults and what could happen if not all students have access.

If your course is paired with a field experience or observation, ask them to read the article "No internet at home? Tap into your community to narrow the digital divide" and invite students to learn about partnerships in their own communities that help provide access. Have them read "Ensure equity in your BYOD classroom" and then explore funding options for a classroom. Sites like Donors Choose (see below) can help teacher's equip their classrooms and advocate for their students.

Finally, an important aspect of equity is making sure all students have the skills they need — like coding — to participate in the workplace. The three resources "Maker movement: Bridging the gap between girls and STEM," "Video: Ruha Benjamin: Incubate a Better World in the Minds & Hearts of Students" and "Webinar: Girls Can Code" can help to drive this home.

This unit can help reinforce personalized, differentiated and individualized learning, as well. It's important to talk about the teacher's role in giving all students access to the tools and training students need for college, career and citizenship.

Try these activities

Interview a teacher

Connect students with a teacher at a school with an economically diverse student body or ask them to find a teacher to interview on their own via Twitter or through the ISTE PLNs. Suggest questions like these for students to ask:

- Do all of your students have technology at home?

- Do all of your students have internet at home?

- How does the community work with your school to make sure that students have access?

- What do you or your school do if a student does not have access at home?

- Are some kids better prepared to use technology than others? If so, how can you help level the playing field?

- How is your school making sure that all students have access to technology?

- Do some students have more opportunities available to them?

- What does your school do to make more opportunities available for all students?

Code.org activities

Code.org is an excellent source of coding activities for students, and it's also a good site to learn about equity. As I was starting to teach coding, I learned from a local educator who was trained through Code.org's train-the-trainer program. The model has a local educator teach other educators why coding matters and how to incorporate coding activities across the curriculum. We have partnered with our local Code.org trainer who reserves a few seats for future teachers when we host workshops.

By learning about coding curricula available in K-12 schools, you can help your students incorporate coding and future technology career exploration in their teaching. Find coding workshops in your area.

Donors Choose critique

Donors Choose is a crowdsourcing site specifically for teachers. While future teachers can't apply for Donors Choose grants, they can pair with a current teacher to help them write proposals.

Have your preservice teachers critique three Donors Choose requests on the website and explain what the educators did well and what they could improve about their requests. Next, have them develop guidelines for creating a good proposal. Use the Donors Choose template to fuel conversations about resources and opportunities for your classroom.

If possible, invite a local educator who has used Donors Choose to speak to your students about their experiences. I created a few videos when I taught grant writing a few years ago and I use those to supplement my teaching on equity.

ISTE Educator Standards addressed by these activities:

Leader. Educators seek opportunities for leadership to support student empowerment and success and to improve teaching and learning.

Citizen. Educators inspire students to positively contribute to and responsibly participate in the digital world.

Digital Learning Lessons & Resources

This is one of the most exciting sections of the ebook because it illustrates what students can create when they harness technology. The key here is content creation. The National Educational Technology Plan guidance for Teacher Education programs advises educators to "focus on the active use of technology to enable learning and teaching through creation, production and problem-solving."

The two articles in this section that jump out at me are "25 resources for bringing AR and VR to the classroom" and "Students create tech tutorials to teach each other." These are the kinds of activities that I have my preservice teachers do to help build both problem-solving and content-creation skills.

Try these activities

App review video

Future teachers need to learn to how to critique an app and make choices about whether to use it. To that end, I have students create a video app review using set criteria or review an interactive website geared toward secondary students. The Langwitches blog is a language arts blog that offers exemplary app reviews based on learning theory, which makes it a good model to show students.

Students can create their app reviews using screencasting tools like QuickTime for Mac or Jing or Camtasia for Windows. iOS 11 for the iPad has a built-in screencasting tool. Once they create their screencast review, they upload them to a common site, such as Google Drive, Flipgrid, Google Classroom or Dropbox, so everyone can review all the videos in one place. We house ours on Badgelist so students can earn a badge for uploading their videos.

The purpose of this activity is to create reviews for others in our PLN to help build our collective knowledge. Have students review and respond to each other's reviews in order to build their knowledge of available apps.

AR/VR lab

Most students are wowed by using augmented (AR) and virtual reality (VR), so you might consider just jumping into the activity before having them read about the tools. I like to introduce augmented reality using coloring apps like Barcy and Quiver. These free coloring sheets allow students to see images pop out using their phones or tablets. Other apps like AR Circuits allow students to extend the capability of a classroom using printable cards and an affordable app.

For virtual reality, there are several free VR apps that really resonate with students. First, Nearpod is a learning app that takes users on virtual field trips and The New York Times has a VR app (nytvr) that allows viewers to watch current events and features produced by global journalists in the field.

One way to get students familiar with new technologies is to set up stations around the room for them to explore. One station might have robots, like Sphero or Ozobot, while another might have games, like BloxelsBuilder or Tiggly.

Assign students to write a full lesson plan using one or more of these technologies, and then have them critique each others' work. This pairs nicely with the Donors Choose activities, which helps students think about obtaining resources for their future classrooms.

Host a technology exploration fair for a local school

One way to engage your community and help build your students' skills is to organize a STEM activity at a local school. Bring technologies for children to explore so your students can see how children interact with the technologies to inform how they might use them. Working with students in the grade level they hope to teach is one of the most important ways to motivate them and connect to their future careers. This kind of event carries the added benefit of supporting local partner schools. Reach out to alumni from those schools and promote your programs while providing real-world experiences.

ISTE Educator Standards addressed by these activities:

Designer. Educators design authentic, learner-driven activities and environments that recognize and accommodate learner variability.

Facilitator. Educators facilitate learning with technology to support student achievement of the ISTE Standards for Students.