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# Research Windows: ISTE Standards in the Research

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# ISTE Standards in the Research

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When ISTE began developing educational technology standards for PK–12 students in the early 1990s, it was ahead of its time. The organization saw the need to prepare students for the future, and it invested in standards as a way to give schools a clear path to staying relevant. The future that ISTE foresaw has definitely arrived, but it's not standing still. To ensure that the standards remain useful for students and educators around the world, ISTE has submitted them to a rigorous updating and revision process.

Standards are also helpful in research, as they provide a frame of reference to explain, predict, and understand phenomena. Imagine that you have been asked to provide a report on the appropriate use of technology in your classroom. From your teaching experience, you may be able to describe a number of things you do that could be considered appropriate use of technology. However, if you were able to use the ISTE Standards (formerly the NETS) to guide your thinking, wouldn't that task become much easier because you'd have specific things to look for? Also, the evidence you gathered would not be based on your experience alone, but on the collective experiences and knowledge of many educators and experts in the field who developed the standards.

The ISTE Standards (iste.org/standards) are designed to connect with different roles and responsibilities in an educational environment. For instance, if you wanted to observe the principal of your school, you would use the ISTE Standards for Administrators (ISTE Standards•A), and if you wanted to investigate how the students in your class are using technology, the ISTE Standards for Students (ISTE Standards•S) would be appropriate. Researchers can use the ISTE Standards in this same way. The other sets of standards include the ISTE Standards for Teachers (ISTE Standards•T), Coaches (ISTE Standards•C), and Computer Science Educators (ISTE Standards•CSE).

I searched the literature to get an idea of how researchers are using the ISTE Standards in recent years. I collated all of the studies I found and organized them into groups depending on which of the ISTE Standards they discussed. Next, I grouped them depending on the role the standards played in the context of each study. (See the table on the next page.)

What initially stood out is that the ISTE Standards have definitely gone international, as researchers across the globe are using them. Researchers in Turkey and China, in particular, appear to be regular users of the standards, as numerous studies originated in these two countries.

In the collection of research I found, the most frequently used set of standards was the ISTE Standards•T, followed by the ISTE Standards•S. Many of the ISTE Standards•T studies focused on preparing the future teaching workforce. Researchers have often found that new teachers are not adequately prepared to use technology, so many have turned their attention to thinking about how preservice teacher courses are aligned to the ISTE Standards.

For example, Cindy Kovalik, Chia-Ling Kuo, and Aryn Karpinski from Kent State University compared an educational technology course to

the ISTE Standards•T. They found that the preservice teachers made significant progress in technology knowledge in all five standards in the set. However, they found that the course did not address some of the performance indicators.

Researchers have also found that new teachers often lack knowledge about how to use technology because their college professors didn't have the skills and knowledge to model good technology use when they were in teacher training. Turkish researcher Muzaffer Elmas used the ISTE Standards•T to examine faculty use of technology at one college to see if it aligned with the standards. The study found that it did match up to the standards in many ways, depending on the lecturers' age and computer experience.

The evidence I found is probably just scraping the surface of the many ways researchers use the ISTE Standards. I think it would be interesting and useful to collect a database of ISTE Standards–based research to gain a better understanding of how they can be used. Therefore, I would like you to help me create such a record! I have published a Google Form (goo.gl/RE7EIT) where you can submit research you have read or published. If you want to review the studies reported so far, you can access the database (goo.gl/G9yS9P). You will notice that the first few studies in this database are those mentioned in this article.

For those who conduct research, we would also like you to consider the ways you can use the ISTE Standards in your studies. (If you plan to reproduce or modify the text of the standards in your study, remember to request permission from ISTE at iste.org/permissions.) You may also be interested in submitting this research to one of ISTE's two prestigious academic journals, the *Journal of Research on Technology in Education* (iste.org/jrte) or the *Journal of Digital Learning in Teacher Education* (iste.org/jdlte). These journals are peer reviewed, meaning that they send each manuscript to other researchers for evaluation to ensure that every study is of high quality.

Good, rigorous research provides new insights and answers to our questions. It also provides critical information about what works in education and what doesn't, and it becomes fuel for policy changes that will benefit our students. I hope you will accept these calls to action and be part of making those changes!

| ISTE Standards | The ISTE Standards were used for: |
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| ISTE Standards•S | • Evaluating students' skills as they complete high school and go on to college<br>• Measuring student and teacher technology use at different grade levels<br>• Examining what needs to be better addressed in teacher education programs to help provide recommendations for addressing neglected areas |
| ISTE Standards•T | • Measuring the TPACK confidence of inservice science teachers<br>• Assessing whether teachers are following the standards when faced with new technologies<br>• Measuring teacher candidate proficiencies in the final year of study<br>• Examining college/university faculty use of the standards<br>• Evaluating and finding exemplary models of teacher education<br>• Exploring adaptations of the standards for use in higher education |
| ISTE Standards•A | • Determining what technology skills administrators have and what they are lacking<br>• Examining the competencies found in unique societies (e.g., Native American schools) to determine what skills were lacking and how this society could be supported |
| ISTE Standards•C | • Examining how tech coaches support teachers and how these skills are connected with the TPACK framework |
| ISTE Standards•CSE | • Considering the roles and responsibilities of the computer science community<br>• Examining ideas for new curricula |
| Studies that involve multiple standards | • Determining if mobile devices are being used properly in teacher education programs<br>• Examining how the standards can be modified to fit various subject areas<br>• Providing evidence of developed standards to help an argument for why research is being conducted |