

# Tech-2-Grow | Diversifying Technology in the 21st Century Classroom

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## Introduction

With the new shift in education from passive transmittal to active inquiry, the framework for what educators need to know has changed dramatically. Now that teachers are starting to understand and implement the PCK we see technology as the separate tool that can be difficult to integrate due to how rapidly it changes. Teachers also are not receiving the training or guidance they need to use it well. Simply placing technology hardware into classrooms does not ensure it will be integrated well or at all.

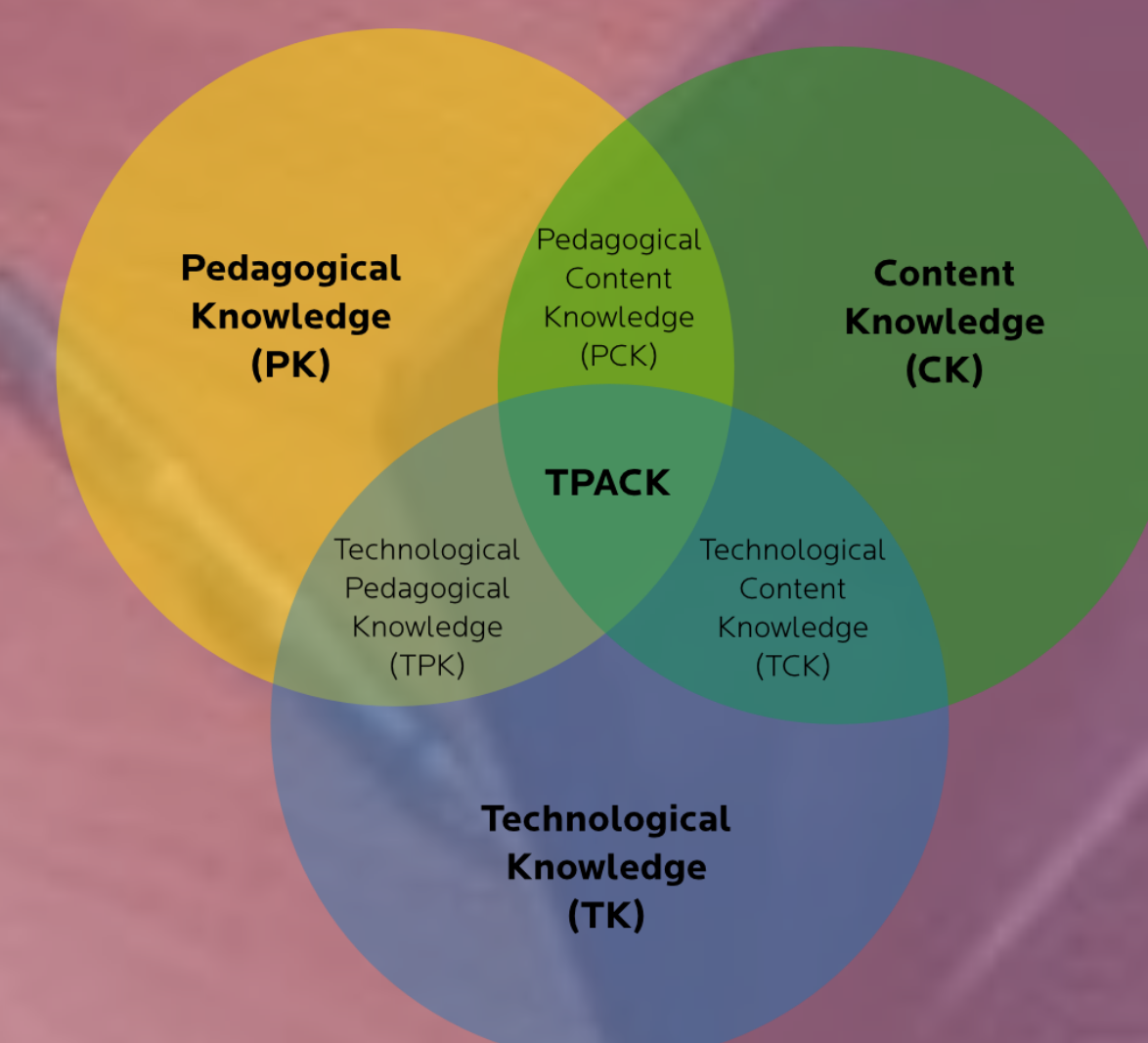
## Background and Need

Educators need support in using technology for 21<sup>st</sup> century inquiry based instruction. Experts need to explore and find ways that technology can be used intentionally within curriculum, not as a separate addition. Because of our fast paced, ever changing life with technology, educators also need continuous training to keep up with the programs and new tools available. As schools attempt to become more inquiry based and adopt the 4 C's, educators need to change their pedagogy and integrate 21st century skills dynamically into their curriculum. Our educational system needs help in facing these challenges, especially now since we have the technology in our schools. When educators are unsure how to implement technology, it can be used as a meaningless edition to practice rather than a powerful tool to enhance instruction.



## TPACK Framework

TPACK is a conceptual framework that Mishra and Koehler describe as the knowledge base for teachers to effectively teach with technology (2005). Three domains Technology (TK), Pedagogy (PK), and Content (CK), working interdependently, teach students 21st century skills while being engaged and meeting their new learning demands. The implications of TPACK are that it is difficult to use these domains interdependently when educators may not be well versed in a particular area. Graham in his research discusses how the domain that really needs to be strengthened in TPACK is the field of educational technology. He claims that it has been difficult to root theories for educational technology “due to rapid technological change (Richey, 1997; Roblyer & Knezek, 2003)



## Results

Through the teacher survey and observation, it was clear that the teachers felt comfortable using technology in the classroom in a wide range of learning experiences. It was interesting that professional development did not have much of an influence with how comfortable teachers were implementing technology into their classroom. Comparing specifically T1 and T3, T1 said that they learned technology through mere investigation and from colleagues while T3 learned it through Masters and NCOE classes. Both teachers, throughout the

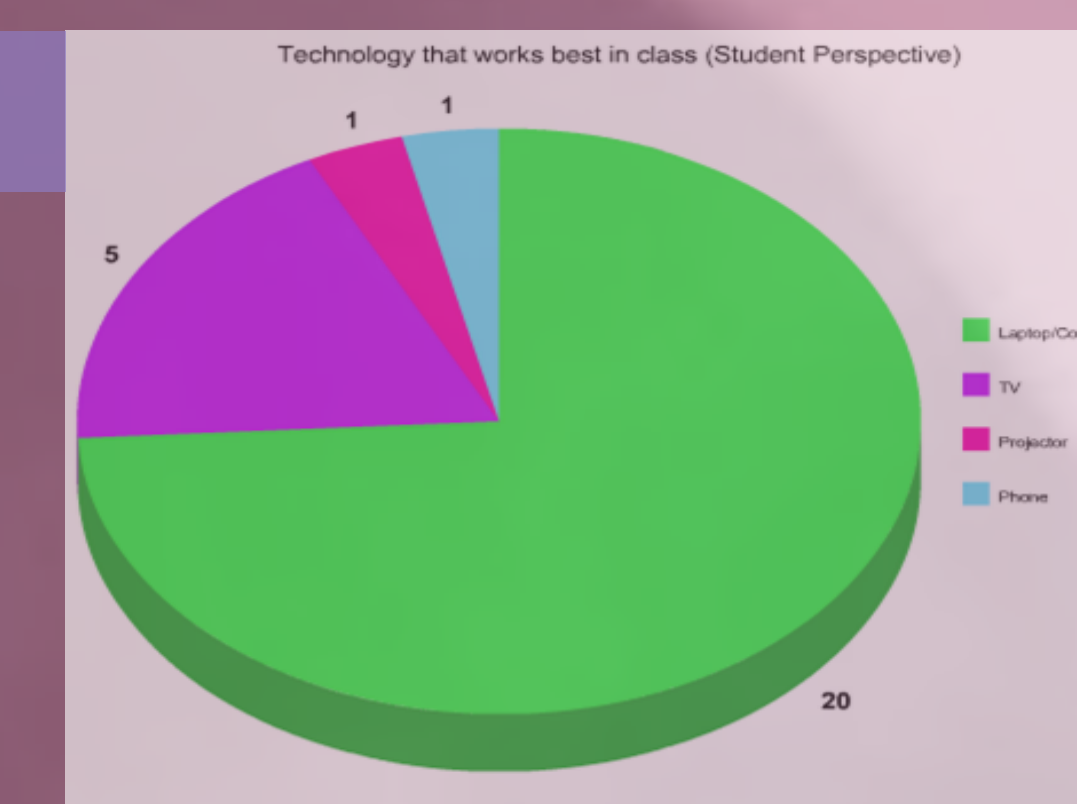
observation, used a multitude of technology with ease in the classroom (see Figure 1). Time and how well students use technology coming into the class, are both things that the teachers say are implications to their learning.



Figure 1.

Through the student survey and observation, it was clear that students were using the technology they felt most comfortable with: laptops (See Figure 2 below). Although there were a wide range of lessons and skills they learned on the laptops, not many other types of technology were used.

Figure 2.



Through observation it was clear students were not just using their laptops to see the agenda better, but to interact and do work or research and create things. Students seemed to easily be able to access agendas, homework and other websites, and questions were about content rather than help with the technology. Although there wasn't a wide range of technologies being used, teachers were having students use a wide range of programs and resources on their laptops in order to make their content accessible and engaging.

## Conclusions

Technology, although not a wide range of it, is being integrated into these classrooms so that students are deepening their knowledge of skills and content. It is clear that although professional development is wanted, it is not necessarily needed for strong implementation. The research also showed that students feel very comfortable using laptops in their classes while using a wide range of programs to help understand or go deeper with their learning. You could clearly tell that the classrooms that embraced TPACK had students that were engaged, excited and could explain what they were learning. All classrooms need to run this way so that students are prepared with the skills and tools they need to solve any problem in their future.

## Literature cited

Harris, J., Mishra, P., & Koehler, M. (2009). Teachers' Technological Pedagogical Content Knowledge and Learning Activity Types. *Journal of Research on Technology in Education*, 393-416.

Graham, C. R. (2011). Theoretical Considerations for Understanding Technological Pedagogical Content Knowledge (TPACK). *Computers & Education*, 57(2011), 1953-1969. doi:10.1016/j.compedu.2011.04.010

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## For further information

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