# FUTURE PROOFING TEACHERS

## MEANINGFUL PROFESSIONAL DEVELOPMENT SOLUTIONS WITH TPACK AND SWIMGRID

by Dr. Malia Hoffmann

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CHAPTER ONE

# INTRO TO SWIMGRID AND TPACK

# CLASSROOM TESTED EDUCATIONAL STRATEGIES

*Improving teaching and learning in the classroom*

Educational strategies come and go. Some stand the test of time, some become obsolete with the latest OS update. True game-changers are rare.

We are excited to have Dr. Malia Hoffmann evaluate, compare and contrast these two methodologies for professional development and technology integration. Both have been tested in classrooms around the country and around the world. Both have proven to improve teaching and learning in the classroom.

Enjoy this analysis and we look forward to start the debate online on any of our various channels of communication.

Enjoy!

Ernie Delgado
CEO, BEYOND Technology Education, Inc.

*"Using the TPACK framework allows leaders to support educators by looking at equal distribution of the core aspects of TPACK: Technological, Pedagogical, and Content Knowledge."*

*— Dr. Malia Hoffmann*

CHAPTER TWO

# SWIMGRID AND TPACK RELATIONSHIP

# SWIMGrid and TPACK Relationship

## TPACK (Technological, Pedagogical, and Content Knowledge)

In this eBook, we will look at Beyond Technology Education's approach to effective technology integration with School Wide Integration Model Grid (SWIMGrid) and pair it with the current research using the Technological, Pedagogical, and Content Knowledge (TPACK) approach. This eBook will cover the foundation of each approach and provide a few examples of how TPACK is used within the SWIMGrid approach.

*"The quality of our future depends on the quality of questions we ask and answer today. Be bold and realize that we are creating that future now."*

*— Ernie Delgado*

CHAPTER THREE

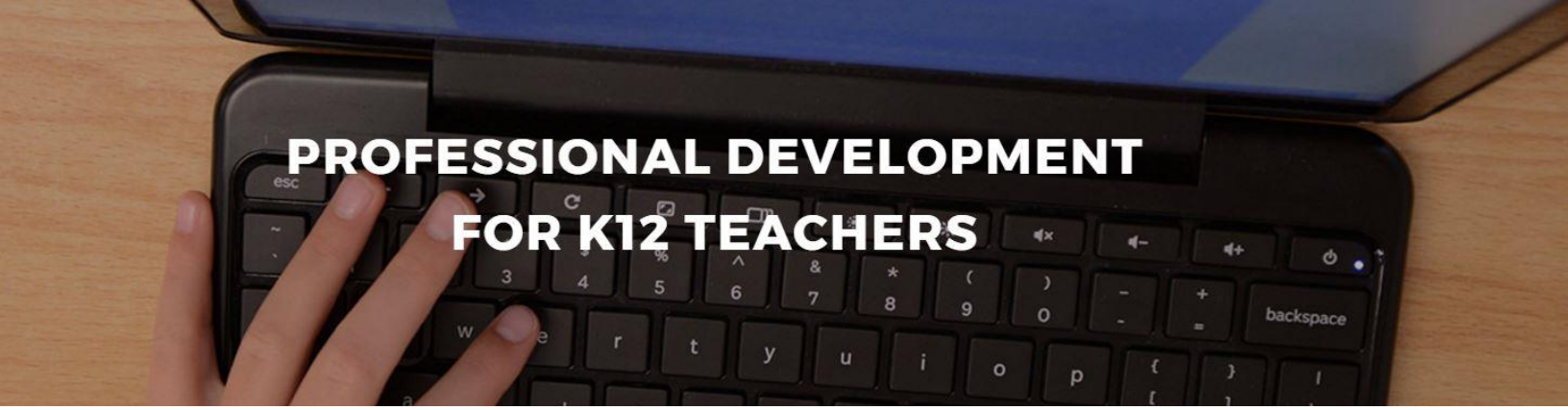
# SWIMGRID COMPONENTS

# SWIMGrid Components

*A simple and effective 5-part technology integration framework for K-12 Administrators*

## SWIMGrid Overview

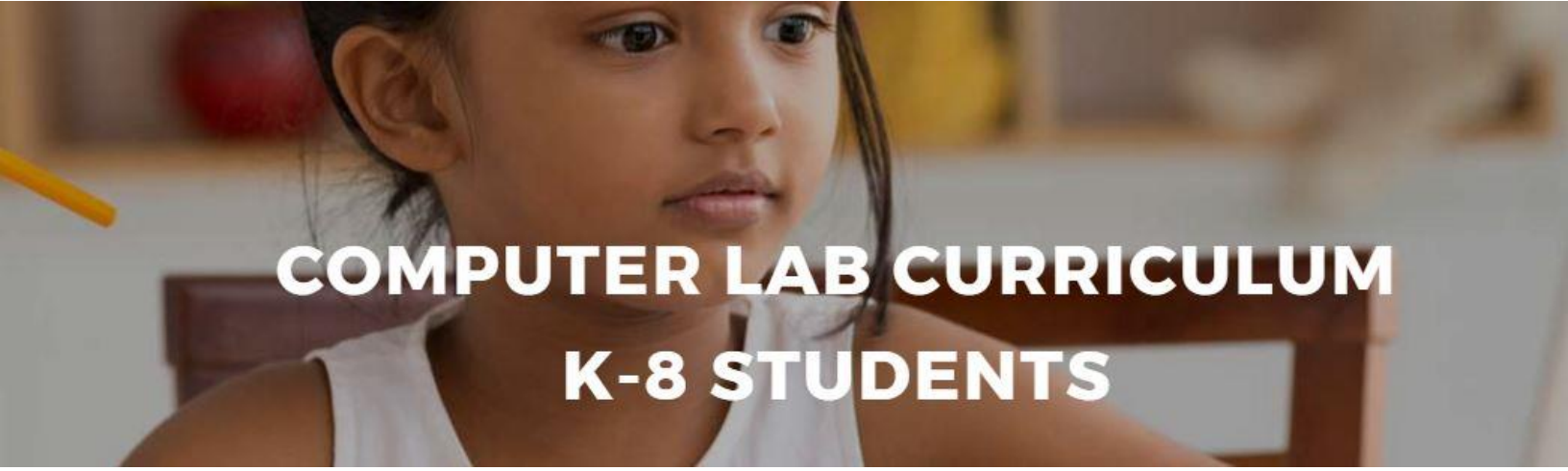
Beyond Technology Education has coined the concept of the SWIMGrid as a technology planning and integrative five-part model for effective technologically rich schools. The SWIMGrid is a simple approach to effective technology integration into schools by supporting teachers and students with both, the technology and the training. “It is a simple and effective, 5-part, edtech integration model for K-12 administrators” (BTE, n.d.). The objective of a SWIMGrid plan goes beyond saving time and money. Ultimately the objective is for administrators and all stakeholders in the technology integration to have a timeline and process in place to set and assess goals. The five parts break down as follows.




## Part One: Professional Development

Professional development in this model is individualized to the needs of the school and the teacher. It starts by working with educators through an initial assessment. This assessment determines teachers' level of technological comfort and ability. The pre-assessment is used as a building block for the professional development. The three Cs, confidence, competence, and content, are utilized as a foundation for the professional development. It is important to note that professional development is a fundamental and important part of any technology integration plan. It lays the foundation for effective technology use. If the goal of a technology integration plan is to go beyond playing games and spending money on apps, appropriate and effective professional development is critical. Professional development is ongoing throughout the process of the SWIMGrid, and it sets the stage for the second stage of the model.

> *"Nothing you do for children is ever wasted."*
> — *Garrison Keillor*




## Part Two: Student Technology Curriculum

It is often assumed that students have the technological skills to perform the tasks asked of them when using devices. However, the SWIMGrid model makes no assumptions to what students know about appropriate technology use. Students may know how to use the technology for personal use; however, they may lack the educational application-based skills. Step two works with students on foundational skills to prepare them for more advanced uses that they will be called to practice later on in the curriculum. These foundational skills are supported by the educators through the professional development that they have received and lead both student and teacher into the Classroom Lesson Integration.

*"Technology is just a tool. In terms of getting the kids working together and motivating them, the teacher is most important."*
*— Bill Gates*


# Part Three: Classroom Lesson Integration

Part three works with the content areas of the curriculum with technology support, this is where TPACK most obviously applies. In these classroom lessons technology isn't used for just games or online worksheets, rather it is used as a problem-solving tool connected to the content standards. The curriculum is developed and adapted with a team of educators and educational technology experts. It is built upon the foundation skills that have been taught to the students and the professional development provided to the educators. Even with effective PD, many teachers will still struggle at this point due to a lack of experience and reference points on how to use technology in their classroom. Often, this is a perfect opportunity to model or coach teachers and show them how an effective technology enriched lesson and class should be introduced with students. Of equal importance is the fact that each integrated project produced by teachers can easily be templated and recreated for another classroom lesson. In this way, the time spent to create one lesson can easily be justified as they produce many variations to support classroom learning. However, none of this would be successful without proper infrastructure.

> *"Any teacher that can be replaced with a computer, deserves to be."*
> *— David Thornburg*


## Part Four: Infrastructure Optimization

Without proper infrastructure, any rich technological curriculum will fail. The SWIMGrid assesses the current tech environment, addresses needs, and puts into place robust wireless networks with appropriate firewalls, policies and devices. Part four also ensures all devices are up to date and places those devices on rotation. Although the goal for many schools is a one-to-one implementation (1 device for each student and teacher), the goal should really be to prepare for many-to-one. In the very near future schools will also have to deal with smart-watches, smart-glasses, smart-backpacks, smart-lunch boxes, smart-tennis shoes, etc. Each student and teacher will have several connected devices. These four parts lead us to the final part of project management.

*"I believe this passionately: that we don't grow into creativity, we grow out of it. Or rather, we get educated out if it."*
*– Ken Robinson*


## Part Five: Project Management

The final part in the SWIMGrid is project management. This process assesses each of the parts along the way and makes adjustments as needed. It revisits each of the parts and provides additional training and updates. Project management is there from the beginning and continues to ensure success along the way. The BTE Project manager provides insights and perspectives often unnoticed by a school's administration. Being able to work alongside teachers and students, the BTE Project Manager can see and hear what teachers and students are doing and saying. As an outside observer, this can provide the opportunity for valuable feedback about school culture, program successes and potential obstacles.

> *"Truly believe that each and every student is capable of reaching the highest level of learning."*
> — *Alice Keeler*

## Final Thoughts on a True Game-Changer

The SWIMGrid is a fluid process which can be individualized based on the needs of the educators and students. It is adaptive and flexible, which are important attributes in the ever-changing technological environment.

As mentioned in part three, TPACK is integrated into the SWIMGrid process; however, to truly understand the integration process one should obtain foundational knowledge of TPACK.

> *"Students must be able to identify both explicit and implicit information, so they can make inferences about what they read. The trick is designing fun activities to keep students engaged as they practice and apply these new skills!*
> *— Catlin Tucker*

*"So often we say. "Use technology, it motivates students!", but not all students. You have to get creative and if you are using the same tired tech applications that could be the reason for it as well."*

*— Dr. Malia Hoffmann*

CHAPTER FOUR

# TPACK COMPONENTS

# TPACK Components

## *The distribution of the core aspects of learning: Technological, Pedagogical, and Content Knowledge.*

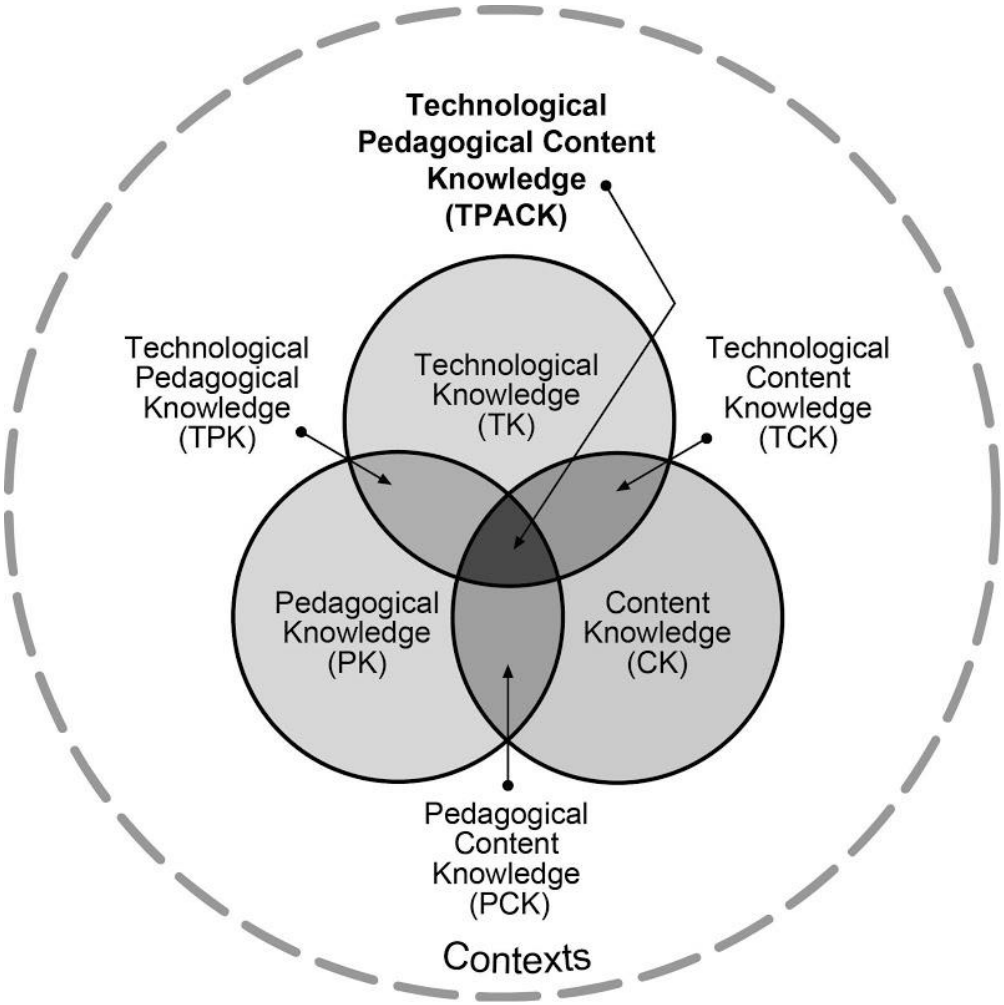
Technological Pedagogical and Content Knowledge (TPACK) is a transformed term that Koehler & Mishra (2008) have adapted from Shulman's (1987, 1986) pedagogical content knowledge (PCK) to include the technological aspect. It emphasizes teachers' knowledge because teachers are the biggest influences in the classrooms. Using the TPACK framework, allows us to look at equal distribution of focus on each of the three-core knowledge area in TPACK, Technological, Pedagogical, and Content.

A combination of Knowledge of any of the three core components of TPACK are most commonly used by teachers in their classrooms. Figure 1, taken from Koehler & Mishra (2008) demonstrates the combination of components of the TPACK framework. Each component is equally important and equal distribution of the component creates the best learning environment (Koehler & Mishra 2008).

> *Teachers are amazing people living in tough times, doing the right things even when the wrong things are being done to them.*
> *— Vicki Davis (aka: Cool Cat Teacher)*

# TPACK

## Figure 1 :



# Content Knowledge (CK)

Any combination with knowledge and the core components can exist. Content Knowledge (CK) is the knowledge of the subject matter that is to be taught (Mishra & Koehler, 2006). In the case of using the SWIMGrid, CK would only focus on the topic of the curriculum. It would not integrate technology, nor would it adapt pedagogical strategies. A teacher who only uses CK would be very knowledgeable in the content area; however, may not have knowledge on how to teach or how to use technology. Knowing how to teach is very important, which is why Pedagogical Knowledge (PK) is also emphasized in TPACK.

# Pedagogical Knowledge (PK)

Pedagogical knowledge is the educators' knowledge in how to teach, including educational objectives, students' evaluation, and learning processes (Mishra & Koehler, 2006). Typically, through experience and in their pre-service teaching program, educators learn pedagogy. Knowing how to effectively create lesson plans, vary instruction, and manage a classroom all make a pedagogical expert. This expertise is demonstrated through differentiation and a strong sense of care for the students' education and well-being. Being an expert in pedagogy separates knowledgeable people, or those who may have sound CK, from knowledgeable educators.

# Content and Pedagogical Knowledge (CPK)

Not only is it important to have a strong foundation in the content knowledge, but sound educators must also be experts in content pedagogy as well. Combining Content Knowledge and Pedagogical Knowledge creates a better learning experience for students. Educators who can effectively do this are able to choose appropriate teaching techniques and arrange the content so it can be best understood (Mishra & Koehler, 2006). Often, educators who understand and apply CPK well will have positive student evaluations. Students feel that the instructors can meet their diverse learning needs and create a positive educational environment for them while further increasing their content knowledge. For instance, teaching mathematics, a teacher would pose meaningful questions relating to what the students know. A teacher who is sound in his CPK will be able to effectively find errors in students' work and suggest corrections. The instructor will not only know math concepts but can adapt the instruction to meet the students' needs.

# Technological Knowledge (TK)

The Technological Knowledge (TK) is the knowledge someone has regarding the technology tools. Those tools can be analog (books and/or whiteboards) or digital (Internet, tablet applications, and/or web 2.0 tools) (Mishra & Koehler, 2006). TK is always changing since the technologies are always changing. With that in mind it is difficult to define technological knowledge due to its state of flux. Becoming computer literate is a skill that an educator holds with the ability to stay flexible and apply knowledge across platforms or tools making an educator knowledgeable in technology (Koehler & Mishra 2008). Educators who have TK can troubleshoot tech issues on their own. They do not require a lot of direction and they also have a large repertoire of tools to use. However, having just TK alone does not make an effective educator.

# Technological and Content Knowledge (TCK)

Blending Technological Knowledge and Content Knowledge (TCK) is when the educator can find or create connections between the content areas and the technologies. An expert teacher in this area would be able to find tools that connect to the core subject areas, for instance using Geometer's Sketchpad for teaching mathematics. TCK teachers can augment tasks that were done without technology and provide relevant technologies to achieve those same learning objectives (Mishra & Koehler, 2006).

# Technological and Pedagogical Knowledge (TPK)

Technology teachers are usually strong in Technological and Pedagogical Knowledge (TPK) and can choose the right technologies for the learning objectives. The educator understands and demonstrates different teaching strategies and varies the technology uses. An expert in this area can find a variety of tools for a variety of instructional uses (Mishra & Koehler, 2006). He or she can adapt to the trends in technology and stays up to date on the newest educational technologies. Rather than take an analog task and substitute it with technology, this type of teacher will use technology as a tool to redefine that project. The key to TPK is the diversity in tools and teaching strategies that the teacher implements. The technology is the tool, not the purpose.

*My dream was to have a laboratory and invent something amazing, along with having an aeroplane, a spaceship and a time machine.*
*— Roger Wagner*

# Technological Pedagogical and Content Knowledge (TPACK)

Finally, Technological, Pedagogical, and Content Knowledge (TPACK) is the ideal blend of all three components. It requires full understanding of each area and how to use and apply each of the core components. TPACK applies a variety of technologies that represent concepts and facilitates pedagogical techniques to differentiate teaching (Mishra & Koehler, 2006). An educator who incorporates TPACK effectively can build on students' prior knowledge by including appropriate technologies and best pedagogical practices. This type of instruction blends technology seamlessly into the classroom. This applies to the technology teachers and their courses as well as the subject matter instructors. He or she does not use technology for the sake of technology use, but rather has a deliberate educational purpose. A sound TPACK competent educator can facilitate several different applications of tech tools. An effective TPACK integrating educator can model this framework in instruction daily and provide an integrated teaching approach to meet the diverse needs of all learners. This is the approach that the SWIMGrid incorporates in their professional development and classroom lesson integration parts of the model.

*Differentiating the teaching approach can open the door to explore other pedagogies to implement into the classroom to improve teaching strategy.*
*— Dr. Malia Hoffmann*

CHAPTER FIVE

# CONCLUSION

# Conclusion

*Great ideas drive innovation in the classroom*

## Conclusion

TPACK is an important framework in education. It is implemented into the SWIMGrid approach that sets Beyond Technology Education's (BTE) reputation as a cutting edge educational consultant team that prepares teachers to be leaders in education and prepares students for their future by exposure to real-life technological applications. Modeling the TPACK framework through the SWIMGrid, BTE's knowledgeable, innovative education make a huge impact within the schools and can help you realize tremendous change in your education program.

*No matter what people tell you, words and ideas can change the world.*
*— Robin Williams*

*Regardless of potential inappropriate uses, that is no reason to forgo it for educational uses. The key is to have an open conversation with your students about acceptable use, just like any new device, app, website or other real world technology.*

*— Dr. Malia Hoffmann*

CHAPTER SIX

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*— Computer Teacher, San Diego, CA*

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