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Leading the Charge: Shaping the Integration of Technology

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Abstract

If the advancement of technology and knowledge were to somehow freeze today, current students would have a very fair chance at leading successful careers and being positive contributors to societies of the future. For obvious reasons, that is not going to happen. Watching television for a handful of minutes or browsing the internet for a short while will more than likely alert the user to the reality of technology: it is ever-changing, endlessly advancing, and rapidly evolving beyond imagination. In light of this, teachers and leaders face one of the most important, yet one of the most challenging, tasks: how can educators effectively prepare learners for this continuous advancement in technology?

Developing future-ready learners requires teachers and leadership teams to embrace changes in technology and hone their practices to reflect that. Ideally, educators must incorporate the teaching of skills and competencies related to the creation and use of technology, so that future generations have the tools to be successful contributors to their societies. Likewise, leaders must take full advantage of their influence in order move teacher practice forward. Maintaining a balance between being a catalyst of change and empathetic to the needs of others will likely result in positive changes towards making the use of technology a staple of every classroom. The shift in teaching and learning discussed in this paper is not simply the addition of gadgets to the classroom setting, nor is it a call for some written work to be typed, coding challenges to be completed sporadically, and the building of Lego Mindstorms as STEM projects. While these activities definitely involve the use of technology, the idea is for educators to build learner confidence and skills to be able to use any technology that becomes available, and to problem-solve and collaborate to create and invent within all the different realms of technology.

Keywords: technology, future-ready, change, teacher practice, collaboration

"Heraclitus, a Greek philosopher, has been quoted as saying 'change is the only constant in life'" (Singer, 2018). Educational leaders must prepare their school teams and staff members for the inevitable changes that will come in the future. Many people are afraid of change until they can view it in a positive way and see its benefits. School leaders have the challenges of changing

the mindsets of their staff and creating positive change in relation to technology. Technology is ever-evolving and school teams need to take on that challenge and change along with technology.

Design Thinking for School Leaders: Five Roles and Mindsets that Ignite Positive Change by Gallagher and Thordarson (2018) thoughtfully discusses how educational leaders can create a positive culture of change in their schools. The authors use a combination of research and personal stories to discuss the five different mindsets. All of the mindsets have different qualities, and a school leader does not necessarily fit into the confines of just one mindset. They can embrace many, or all, of the mindsets in their leadership styles at the school. The mindsets are Opportunity Seeker, Experience Architect, Rule Breaker, Producer and Storyteller. Each mindset is valuable and approaches change in a different and unique way.

The Opportunity Seeker "shifts from problem-solving to problem finding and actively seeking opportunities" (Gallagher & Thordarson, 2018, p. 8). The Opportunity Seeker understands that it's not just about solving current problems; they need to consider all the information, identify the areas where there is an unmet need, and then create opportunities to find a solution. "Problem identification and definition is a crucial skill for leaders" (Gallagher & Thordarson 2018, p. 43). Educational leaders must not simply solve problems; they must identify future problems and needs and steer their staff into creating changes that will address those future problems. Always looking for problems can feel negative, so it is important for the school leader to also embrace the mindset of the Experience Architect when identifying problems.

The Experience Architect can take the problems identified by the Opportunity Seeker and create positive change for the school team. They are "a person who relentlessly focuses on creating remarkable experiences, a person who maps out how to turn something ordinary in for something distinctive—even delightful—every chance they get" (Gallagher & Thordarson, 2018, p. 63). The

Experience Architect views each problem as a possibility and an opportunity to do something great. They do this by "encouraging and rewarding creative thinking and collaboration" (Gallagher & Thordarson, 2018, p.67). Through collaboration, they are able to listen to the input of the staff and hear what is working and what needs to be changed.

The Rule Breaker "thoughtfully changes the way things are always done" (Gallagher & Thordarson, 2018, p.9). Similar to the Opportunity Seeker, they are looking to make changes from the status quo. They are regularly asking why things are done the way they are, what the consequences would be if the rules were changed, and then embracing their Experience Architect side to create positive opportunities for change. The Rule Breaker understands that some rules are important and need to stay in place. Still, they reflect on the current rules and collaborate with the staff, students, parents, and the school community to decide if the rules need to remain or if changes are necessary.

Collaborating around change and getting input from others is important with keeping change positive, but action is also important. The Producer "hustles, gets things done, creates rapid learning cycles for his or her team, and is responsible for shipping a "final" product. (Gallagher & Thordarson, 2018, p. 9). They are always looking to take action and get things done. The Producers not only talk about change, they make it happen. The Producer also recognizes that they need to set small attainable goals and stay focused on the end product to make the change happen. They trust their gut and call their staff to action to get results.

Like all of the mindsets, the Storyteller wants to see positive change in their schools, but they do it by making personal connections. The Storyteller "captures the hearts and minds of a community to amplify the good and create authentic community" (Gallagher & Thordarson, 2018, p .9). They believe in talking to the school staff and community and approach change with a pull-

in rather than a push-out approach. They understand that “there are two ways to share knowledge: you can push information out or you can pull people in with a story” (Gallagher & Thordarson, 2018, p. 136). They spend time telling the team about the story and the journey and making personal connections with the people they are working with.

All of the five mindsets are important to consider when creating positive change within a school. People often fear change even if they know it is necessary for success. School leaders must approach a change, such as the shift in the importance of technology, in a positive manner. They need to be Opportunity Seekers and identify future problems that may arise with technology, such as finances, regular staff training, and student safety with technology. They need to make the change a positive experience for everyone and be the Experience Architect in the school; many people are hesitant to explore new technology. The school leader needs to help all staff members embrace the change and create a judgement-free zone to try new things. They need to be the Rule Breaker and decide which rules relating to technology must stay in place and which ones can change or be ignored. They need to be the Producer and make change happen. Most people are aware that technology is changing, and the Producer will ensure that appropriate change happens. Finally, they need to be the Storyteller. They need to relate to their staff in a personal way and share stories that will pull the staff in and promote change.

Contrasting Eras

In the early 1900s, a typical Canadian classroom could be described as a collection of boys seated in rows and dressed in uniform. A window provided a dim source of light, as the master eerily watched over from his gigantic desk. In silence, the students engaged in a variety of activities in the three Rs (reading, writing, and arithmetic). Fortunately, one hundred years later, this is no longer the case. Today's classroom boasts a much more inviting environment in which learners

engage collaboratively in tasks that are designed to build on skills such as critical thinking, problem-solving, communication, and the analyzing and synthesizing of information. But is this enough? If the advancement of technology and knowledge were to somehow freeze today, current students would have a fair chance of leading successful careers and being positive contributors to future societies. However, this is definitely not the case. Watching television for a handful of minutes or browsing the internet for a short while will more than likely alert the user to the reality of technology: it is ever-changing, endlessly advancing, and rapidly evolving beyond imagination. In light of this, teachers and leaders face one of the most important, yet one of the most challenging, tasks: how can educators effectively prepare learners in their schools for this continuous advancement in technology? "We are faced with the challenge of redefining a foundational education to keep up with the evolution of skills required to solve problems, innovate and succeed" (Partovi, 2018).

In the article, "Get Ready: Technology Ages Faster than Cheese!", Looysen and Rachid (2019) focus on the idea that in order for learners to be future-ready, teachers and leadership teams must embrace changes in technology, and hone their practices to reflect that. Ideally, educators must incorporate the teaching of skills and competencies related to the creation and use of technology, so that future generations have the tools to be successful contributors to their societies. Likewise, leaders must take full advantage of their influence to move teacher practice forward. Gallagher and Thordarson (2018) provide a framework that leaders can take advantage of when implementing necessary changes to their school environments. Maintaining a balance of the mindsets, between being a catalyst of change and empathetic to others, will likely result in positive changes towards making the use of technology a staple of every classroom.

The shift in teaching and learning discussed in this paper is not simply the addition of gadgets to the classroom setting, nor is it a call for some written work to be typed, coding challenges to be completed sporadically, and the building of Lego Mindstorms as STEM projects. While these activities definitely involve the use of technology, the idea is for educators to build learner confidence and skills to be able to use any technology that becomes available and to problem-solve and collaborate to create and invent within all the different realms of technology. *The Spiral Playbook*, authored by Linda Kaser and Judy Halbert, describes the following as one of their key goals.

> Creating the conditions in school districts and learning settings where curiosity is encouraged, developed, and sustained is essential to opening up thinking, changing practice, and creating dramatically more innovative approaches to learning, teaching, and leadership (Kaser & Halbert, 2017, p. 9).

This quote is the essence of what schools need in order to make the leap to more meaningful and more current learning experiences for learners. Teaching and learning that is up-to-date with advancements in technology and innovation are no longer optional. Wantulok (2015) explains that there are many important reasons why weaving technology into the classroom is paramount: learners of today are immersed in technology, technology eases personalization and engagement, and careers of the future are going to demand digital competence and fluency.

O. S. Geiger is an elementary school in the northeast of Calgary. Many learners who attend the school present with complexities and learning difficulties that are accommodated by the teachers within the building. Some examples of weaving technology into teacher practice are:

- providing one-to-one laptops with speech-to-text software allow students who require this accommodation to complete writing activities;

- using document cameras to model tasks such as annotation of texts or going through steps of an art project;
- utilizing iPads as recording devices during independent reading in order for learners to identify gaps and set individual goals;
- writing code within tasks that emulate real-world uses for computer programming.

Research shows that creating technology-based lessons is far more engaging for learners than traditional lessons (pencil and paper tasks for example). Moreover, weaving technology into learning tasks bridges gaps in student learning and skills. Many future careers will demand digital fluency, and therefore, educators must make a significant effort to teach skills and competencies that readies learners for the future.

Discussion

Finding ways to make the use of technology in the classroom seamless is a challenging task. School leaders need to use design thinking and encourage teachers to do the same to support the use of technology in the classroom. Design thinking is "a model for reframing methods and outcomes; design thinking reconnects educators to their creativity and aspirations for helping students develop as deep thinkers and does" (Wise, 2016). Gallagher and Thordarson (2018) discuss five mindsets of educational leaders that promote positive change.

Opportunity Seekers are able to identify possible problems that may arise as current technology is introduced into school settings. In the past, schools "debated about whether or not certain types of calculators should be allowed in class, as they essentially solved the problems for students that struggled with math" (Heick, 2016). While calculators are an older form of technology, the same concept applies to future technology. There may be concerns about "apps that supply quick, accessible answers for problems that a student should actually be thinking about

in greater depth" (Heick, 2016). When identifying current or future problems, "almost everyone's first step to problem-solving is suggesting solutions" (Gallagher & Thordarson, 2018, p. 44). While solutions and suggestions are important and necessary, it is important to ensure we have all the information before suggesting solutions. Collecting enough information can be a struggle for educators; "we rarely stop to ask clarifying questions, dig deeper into the issue, or even listen to the entire problem" (Gallagher & Thordarson, 2018, p.44).

School leaders will need to find ways to identify possible future problems with ever-evolving technology. They will need to gather information, collaborate with the staff and students at the school and be aware of current and future problems. There will always be future problems with technology due to the fact that it changes so rapidly. Having problems just means that change is happening, and people are moving towards the cheese. We cannot expect teachers to make every correct turn in the maze; dead ends are inevitable. The most important thing is that leaders and staff are willing to tackle the problems and find solutions with a positive attitude. "When you're stuck on a problem and struggling to positively reframe it, try explicitly looking at it from a different perspective. This might be all you need to come up with a great solution" (Gallagher & Thordarson, 2018, p.44). Whole school collaboration and participation can provide many opportunities to reframe the problem and come up with the great solution everyone is looking for.

Weaving more technology into classrooms can create remarkable experiences and, when used correctly, technology can do amazing things. The Experience Architects thrive on that success. Their main goal is to "map out how to turn something ordinary in for something distinctive—even delightful—every chance they get" (Gallagher & Thordarson, 2018, p. 63). Having an Experience Architect leader in the school can be a huge asset to the staff when incorporating technology because of the vast amount of possibilities. When introducing new

technology, the leader would benefit from "practicing the following tenets of improvement" (Gallagher & Thordarson, 2018, p. 69). The tenets are:

> suspend judgement: when you wait to analyze, you stay present in the creative progress, saving the evaluation phase for later. Let go of your agenda. There is nothing to be accomplished. Let yourself get caught up in the experience. Listen in order to receive. When you listen closely to others you can find moments where you can agree to support, building on each other's ideas, rather than evaluating." (Gallagher & Thordarson, 2018, p. 69).

The Experience Architect must present a clear goal through the dreams and possibilities to ensure success. School staff need to know why they are making changes and what they are working towards. "People are more likely to move forward when they have a clear picture of where they are headed, as well as a clear understanding of why they are being asked to do something new" (Gallagher & Thordarson, 2018, p. 83). Students are expected to "set short and long-term goals, as this will guarantee further achievement outside the school environment" (Atieno, 2018). Leaders must act according to their situations and keep their teams on track when moving towards change.

Rule Breakers "thoughtfully change[s] the way things are always done" (Gallagher & Thordarson, 2018, p. 9). They take the time to think about each rule and evaluate its purpose. This can make people uncomfortable as they tend to believe that rules are in place for a reason. However, rules need to evolve and change over time. It is important to follow the rules that are in place, but it is also ok to challenge and change rules. "Rules are created to protect the status quo—not to spur innovation" (Spector, 2017). As Duhigg (2016), the author of *The Power of Habit*, points out:

> [O]nce you understand that habits can change, you have the freedom and responsibility to make them. Once you understand that habits can be rebuilt, the power becomes easier to grasp and the only opinion left is to get to work (Duhigg, 2016, p. 531).

Rule Breakers need to get to work "breaking the rules with intention" (Gallagher & Thordarson, 2018, p. 93). Similar to the ideas of the Opportunity Seeker, the Rule breaker needs to reframe the way they see and understand things.

> Albert Einstein is often noted as believing that we cannot solve our problems with the same thinking we used when we created them. When we move to break big rules for transformative change, we need to be conscious of our current mental models. The changes needed are not linear, and the key to new learning might be to unlearn the old (Gallagher & Thordarson, 2018, p. 110).

To ensure success, Rule Breakers need to remind their staff that "rules are not static—they evolve" (Spector, 2017). The whole staff can work as a team to decide if rules need to stay as they are, evolve, or need to be removed altogether. At first there may be some resistance from the staff when changing rules, especially if the rules have been in place for a significant amount of time. However, "with a little practice, Rule Breakers become happier taking risks, and working on the edge. They see the value of being bold, while remembering that bold scares people. (Gallagher & Thordarson, 2018, p. 112). Going back to the calculator example, the rule used to be that calculators were not allowed in math class because they gave students an unfair advantage. Now, educators strive to find new ways to bring technology into math classes and every other class. The calculator rule evolved over time and so should other rules around technology. A happy and accepting staff will work with the school leader to question and change the rules over time. When the whole staff is open to breaking the rules, it is clear that a successful change is happening.

Once the team has accepted the Rule Breaker attitude, they can then also embrace the Producer mindset. The school leader can begin to get results and make changes happen. “Creating a sense of urgency can be difficult in education, and the leader must show that change is needed and not just wanted” (Gallagher & Thordarson, 2018, p. 117). Producers deliver results; they decide on a change and make it happen. A school leader with a Producer mindset will find ways to bring new technology into the classroom. They will encourage their staff to make it happen and get the change (using new technology) done.

While Producers are looking to make changes happen, they need to remember that not everyone on their staff will be as comfortable with this mindset as they are. To create successful change, producers should “remember that small steps lead to big changes” (Gallagher & Thordarson, 2018, p. 120). When introducing the idea of using and creating more technology, leaders can explain the end goal. Schools should not only be aiming for adding devices such as computers to the classroom; they should look at how the use of technology can become seamless. They need to remember to set clear and achievable goals. They need to talk to their staff and layout plans to gradually make their buildings more progressive.

The final design thinking mindset is the Storyteller mindset. This one encourages leaders to build personal connections with the school team. This does not mean that they are emotional or weak, it means that they are connected. Storytellers will find ways to connect with their staff. They know that “our lives are becoming more connected, and it’s a phenomenon enabled and driven by technology” (Whyte, 2015). A successful Storyteller will “pull people in with a story” (Gallagher & Thordarson, 2018, p. 136). When it comes to technology, this may be a story about how they felt when they first experienced a push for more technology use themselves; whether that experience was years ago or it’s currently happening, the story will build connections and

encourage the staff to bond together and create a lasting change. Just like Hem, Haw, Sniff and Scurry told their story of the change to move towards the cheese, the school leader should share stories about their personal move towards the technology cheese.

Johnson's *Who Moved My Cheese?* (1998) encourages the creation of cultures of continuous improvement. The analogy by Johnson presents four characters who constantly travel through a maze to find cheese. The maze represents where the characters live, and the cheese is the food or nourishment that keeps the four characters alive. One day the characters discover the cheese has been moved. The mice, Sniff and Scurry, realize the need to find new cheese right away, while the two humans, Hem and Haw, are more reluctant to embrace change. The moving of the cheese symbolizes the need for educators to actively improve their practices in order to meet the needs of current students (future society members). The focus of this improvement is to ensure that the skills and competencies that are required by advancements in technology and careers, are taught. The readiness of the mice and the reluctance of the humans to embrace change in the analogy are both accurate depictions of behaviours and reactions that might be demonstrated when change is presented in the real world. Therefore, leaders must be equipped with all five mindsets described by Gallagher and Thordarson (2018) to meet the needs of their individual settings.

Challenges and Limitations

As with any proposed change, reactions vary between one individual and another. This can be due to several reasons, including their understanding of the proposed change, their comfort level to implement it, and their buy-in towards the change. The range of reactions can be placed on a spectrum from excitement and enthusiasm to anger and refusal. In between those extremes, individuals may demonstrate a whole host of reactions such as compliance, reluctance, and fear.

When proposing a change, all of the potential reactions should be taken into consideration, and empathy and support are a must to advance a culture of continuous improvement in the workplace.

Within professional settings, leaders and colleagues must maintain professional relationships that are based on mutual respect. This is especially true when issues arise as staffs work towards a significant change in vision and practice. As much as implementing necessary change is important, so is understanding the different limitations and challenges. Some of the most predominant challenges that leaders and educators could face in this context are fully understanding and buying into this major shift in practice, having access to ever-changing technology, and being comfortable with teaching and using technology as it becomes available.

One of the biggest challenges that leaders face when attempting to effect change is ensuring that staff members understand and buy into the proposed transformation. "[A] rush to implement new technologies and changes without teacher buy-in or a proper strategy are some of the main reasons why blended learning programs fail" (Chatlani, 2017, n.p.). Without a clear understanding of what the vision is, staff members will feel frustrated, confused, and overwhelmed. One way to support teachers in developing their practice is to frequently remind them of the shared goals and ensure that the work they are doing is meaningful to them and their context. When communicating a shared vision, "[n]ot only do you need to be crystal clear about your highest priorities, you must communicate them *incessantly*" (Burgess & Houf, 2017, p. 78). When an individual understands a goal, and appreciate its importance, they are more likely to implement changes to the best of their ability. After communicating the vision and ensuring that staff members are able to relate to the shared goals, the job of the leader becomes to analyze the evidence and steer the ship in the right direction. The extent of the progress will become apparent from teacher planning and their implementation of student learning experiences (lessons and learning tasks). A leader can then

identify areas in which the staff could afford to grow in order for technology to become more prevalent in teaching and learning. Following this model will pave the way for a culture of continuous improvement in which the understanding is that there is *always* room to grow. These ideas align well with the leader mindsets of "opportunity seekers" and "experience architects" (Gallagher & Thordarson, 2018).

Technology is expensive. Furthermore, over-investing in technology clashes with the idea of conservation that teachers preach to students. The question becomes: how can leaders find a balance between immersing students in the latest technology and not overspending? The bottom line is that if educators are going to shift their pedagogy to make technology a priority, then technology has to be available. Investing in technology is a non-negotiable if a school's vision is to teach twenty-first-century skills and competencies that the leaders of the future will require in their careers.

> In every subject, in every grade, we need to be able to offer our students a variety of learning experiences that are steeped in the rich potential that these tools [technology] now offer, not just in terms of productivity but in terms of the creative and inquiry-based learning that we know work best for students. (Pitler et al., 2012, p. xvi)

A leader can speak endlessly about the need for technology, but if it is not in fact purchased, and the trigger is not pulled by the "producer" (Gallagher & Thordarson (2018), then dwelling about what changes could be effective is not useful to anyone. There are several ways through which schools can obtain the technology they require to advance their students' learning. Johnson (2012) elaborates on ways through which a school can realistically meet their technological needs financially. His recommendation is that schools prioritize their needs, and that a calculated piece of their yearly budget goes towards acquiring new or used technology. Johnson advises that

schools partner up and use collective buying power to obtain bulk technology at a cheaper price. Taking advantage of free software and being on the lookout for grants and bursaries can also help schools in meeting their technology missions and visions (Johnson, 2012). The goal of investing in technology is certainly not the mere accumulation of it; leaders need to be wary of how much technology is purchased and for what purposes, not just to ensure that money is not wasted, but also to not overwhelm staff members. A great indication of whether purchases are successful and what kind of technology a school should acquire comes from the voices of teachers and students. An effective leader will listen to the needs of staff and students and act accordingly in order to accurately meet the technology requirements of their settings.

Change is unknown. Change is time-consuming. Change is demanding. Yet another obstacle faced by "rule-breaker" leaders (Gallagher & Thordarson, 2018) in implementing a lasting change is ensuring that staff members feel comfortable with new technologies and ways of teaching that are presented to them. With technology being ever-changing, cultures of continuous improvement have never been so important. In order for this culture shift to be initiated, staff members must be comfortable with changes they are asked to make. Fullan (2011) warns leaders about 'Fat Plans'—visions that are overwhelming, or goals that are not realistic or attainable, are rarely met with success. "Plans are only as good as the action they inspire. Thus, they have to be clear, specific, communicable, ''sticky,'' linked to action, and above all internalized by the vast majority of people" (Fullan, 2011, p. 89). This is certainly true for technology. It is pointless to invest in different technologies if teachers either don't know how to use them or don't truly understand or appreciate their effectiveness. In terms of this challenge, it is the role of the leader to ensure that staff members receive appropriate professional development, not only to understand the uses of different technologies, but also to learn about how they apply to their contexts and how

they relate to skills and competencies they are expected to teach. “Peer coaching, expert coaching, teacher facilitators, and lead teachers are needed on site in every building” (Fogarty & Pete, 2010, p. 33). Professional development has to be readily available in order to instruct teachers on how to roll out new technologies, but also to help them understand the skills and competencies that students need to be coached in. Furthermore, building a system of distributed leadership can help individuals feel supported and ensure that burnout does not occur. Finally, leaders must clearly model their vision and expectations and take action by immersing themselves within the changes and leading the way. This will help educators become more confident in implementing changes as they are shown explicitly what is expected of them and how they should go about implementing new technologies, and ways of teaching effectively. The “storyteller” (Gallagher & Thordarson, 2018) mindset is key in this situation. By having a leader connect with others on a personal level, staff members will be much more willing to implement changes.

Conclusion

The faster that educators and leaders adapt to change, the more learners in schools will benefit. There is no denying that many skills and competencies that are taught in schools today could one day become obsolete. Recognizing this reality, and then being innovative in ways to teach problem-solving and critical thinking that relate to advancements in our society provide a path of success for current learners who will be the society members of the future. This shift in pedagogy, and these changes that are expected of educators, do not come without challenges. The key to tackling this is to create and maintain a culture of continuous improvement in which educators feel informed and supported to make the necessary changes. Educators must always use the lens to provide the best education for learners. One of the most important questions that they

should be able to answer is how can they best provide a twenty-first-century education to twenty-first-century learners in light of advancements in technology and careers?

References

Atieno, L. (July 10, 2018). *The importance of setting goals for students.* https://www.newtimes.co.rw/lifestyle/importance-setting-goals-students

Burgess, S., & Houf, B. (2017). *Lead like a pirate: Make school amazing for your students and staff*. Dave Burgess Consulting, Inc.

Chatlani, S. (2017). *How administrators can get teacher buy-in on change initiatives.* https://www.educationdive.com/news/how-administrators-can-get-teacher-buy-in-on-change-initiatives/446550/

Duhigg, C. (2016). What google learned from its quest to build the perfect team. *The New York Times.* http://www.nytimes.com/2016/02/28/magazine/what-google-learned-from-its-quest-to-build-the-perfect-team.html

Fogarty, R., & Pete, B. (2010). Professional learning 101: A syllabus of seven protocols. *Phi Delta Kappan, 91*(4), 32-34. https://doi.org/10.1177/003172171009100407

Fullan, M. (2011). *Change leader: Learning to do what matters most*. John Wiley & Sons, Incorporated.

Gallagher, A., & Thordarson. (2018). *Design thinking for school leaders: Five roles and mindsets that ignite positive change.* ASCD.

Heick, T. (2016). *5 problems with technology in classrooms.* https://www.teachthought.com/technology/5-problems-with-technology-in-classrooms/

Johnson, D. (2011/2012). Stretching your technology dollar. *Educational Leadership Journal*. *69*(4), 30-33. http://www.ascd.org/publications/educational-leadership/dec11/vol69/num04/Stretching-Your-Technology-Dollar.aspx

Johnson, S. (1998). *Who moved my cheese? An a-mazing way to deal with change in your work and in your life*. G. P. Putnam's Sons.

Kaser, L., & Halbert, J. (2017). *The spiral playbook: Leading with an inquiring mindset in school systems and schools*. C21 Canada.

Looysen, A. & Rachid, M. (2019). *Get ready: Technology ages faster than cheese!* Paper presentation during a Master's course at the University of Calgary .

Partovi, H. (2018). *Why schools should teach the curriculum of the future, not the past.* https://www.weforum.org/agenda/2018/09/why-schools-should-teach-the-curriculum-of-the-future-not-the-past/

Pitler, H., Hubbell, E. R., & Kuhn, M. (2012). Using technology with classroom instruction that works (2nd ed), *Association for Supervision & Curriculum Development*.

Singer, J. (2018). *The only constant is change*. https://psychcentral.com/lib/the-only-constant-is-change/

Spector, J. (2017). *20 reasons why you should break the rules.* https://medium.com/an-idea-for-you/20-reasons-why-you-should-break-the-rules-2f13360faa74

Wantulok, T. (2015). *How important is technology in education? Pine Cove's top 10 reasons.* https://marketing.pinecc.com/blog/the-importance-of-technology-in-education-pine-coves-top-10-reasons

Whyte, D. (2015). The global village: Technology helps us connect and communicate. https://www.trainingjournal.com/blog/global-village-technology-helps-us-connect-and-communicate

Wise, S. (2016). *Design thinking in education: Empathy, challenge, discovery, and sharing.* https://www.edutopia.org/blog/design-thinking-empathy-challenge-discovery-sharing-susie-wise

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