TECHNOLOGY

FRAMEWORK

Kindergarten to Grade 12 (2019)

TECHNOLOGYFRAMEWORK

Golden Hills Technology Framework (K-12)

Revised October 2019

The objective of this framework is to strengthen instructional practice by leveraging technology for all students as part of the Powerful Learning model. Ideally, Golden Hills teachers and students will reach digital literacy as a result of this framework.

"Digital literacy is more than technological know-how: it includes a wide variety of ethical, social and reflective practices that are embedded in work, learning, leisure and daily life" (MediaSmarts).

Throughout this framework, the term "digital" is used in addition to technology to communicate that Golden Hills is focusing on how digital enhances learning. Fullan, Quinn, and McEachen (2018) clarify "[w]e use the term 'leveraging digital' to signal that we are not discussing devices, software, or apps of the day" (p. 81) and this will framework will follow. Leveraging digital not only enhances, but also accelerates, facilitates and deepens the learning focus.

As well, this framework follows the premise set by Eric Sheninger (2019) that "[d]igital just represents a means to improve teaching and learning in a way that results in better outcomes for our learners" (p. 87). Pedagogy comes first, and technology follows when it enhances learning. Sheninger (2019) continues, "[i]t is crucial that sound pedagogical techniques and best practices are emphasized in order to effectively integrate technology with purpose to enhance teaching and learning. Students must always be at the center of this process. All too often, technology is infused into the learning environment where the teacher is still employing a direct approach to instruction. It's not what the adult does with technology that ultimately matters, but instead what the learners are doing with it" (p. 88).

Why is this framework being developed?

Teachers need to integrate technology seamlessly into the curriculum instead of viewing it as an add-on, an afterthought, or an event.
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ty

Golden Hills believes that continuous school improvement and student success depends on the quality of instruction in classrooms. The purpose of this framework is to support educators in their meaningful use of digital in order to accelerate and deepen learning.

To have in-depth conversations about instructional practices and leveraging digital, teachers need a common language. In addition to common language, all parties involved need to articulate a framework that defines and identifies key components regarding effective classroom instruction and practice using digital.

Research indicates that initiatives are most effective with a division-wide focus and

implementation. A small number of clearly defined goals tied to student achievement which are relentlessly pursued can be expected to result in the greatest gains.

The framework will:
- Highlight how digital can accelerate and deepen learning as an essential part of Powerful Learning.
- Showcase how digital provides opportunities to transform learning, which cannot be done in a traditional approach.
- Guide teacher practice along the continuum of meaningful use of digital. ● Guide the work of all instructional leaders in supporting teacher growth and development around leveraging digital in classrooms.
- Bring together various respected models of digital use.

Technology Framework Beliefs and Assumptions: Technology is inherent throughout Powerful Learning, as a part of achieving Deep Understanding. Being digitally literate means going beyond the acquisition of basic computer skills to being able to acquire, create, connect, understand and communicate information through digital systems and technologies. Students can navigate independently any digital platform at any point in time to achieve their goal, utilizing multiple Core Competencies. The internet is used as a place to store, locate, and share knowledge, regularly for students. Although this trend makes accessing content easier, it also increases the need for students to analyze information through critical thinking and investigative practices. The teacher now needs to support students in being able to discern, critically assess, discover and create new understanding (Fullan, Quinn, and McEachen, 2018, p. 82).

Furthermore, the increasing dependence on digital devices for knowledge storage and acquisition carries the possibility for all students to actively participate in the sharing of their constantly developing knowledge and understanding of concepts. Effective technology integration in educational experiences will better prepare Golden Hills students to be contributing global citizens. Similar to numeracy and literacy, digital literacy is essential for the success of our students. Furthermore, digital literacy can be the vehicle to enhance conceptual understanding of numeracy and literacy. According to the Norwegian Ministry of Education and Research, 2006 and the Welsh Government in 2015 and 2016, digital literacy is as important to students as numeracy and literacy.

Guiding Principles

There are a number of models and resources used to guide this framework. Golden Hills uses the Technological Content and Pedagogical Knowledge (TPACK) and the SAMR (Substitution, Augmentation, Modification, Redefinition) models to guide our digital principles. Also, the Florida Center for Instructional Technology's Technology Integration Matrix (TIM) is foundational to the Technology Framework. Golden Hills utilizes Alberta Education's Learning and Technology Policy Framework as a structure for developing digital use. For the purpose of this framework, the SAMR and TIM models are correlated/combined, and will be known as

Golden Hills Digital Continuum (GHDC).
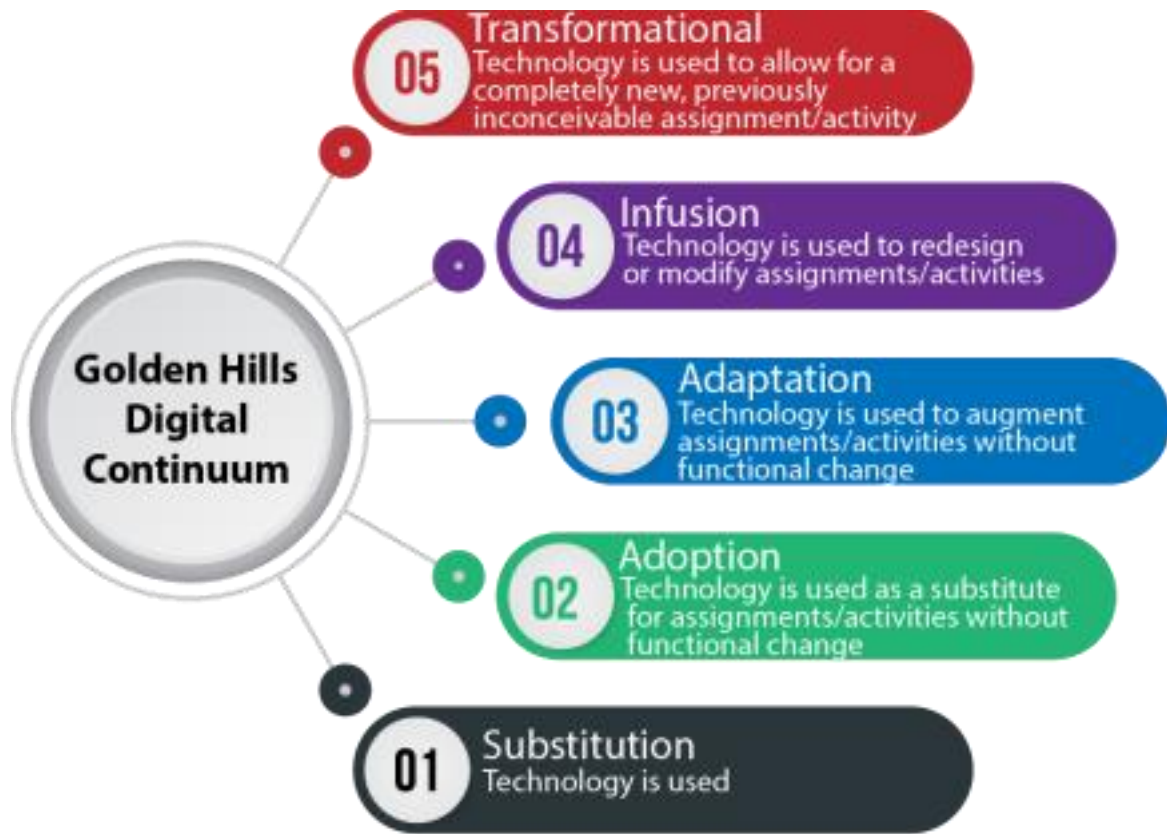
* Model referenced from SAMR and TIM

Golden Hills Digital Continuum

SUBSTITUTION Level

Technology is used.

- Technology (i.e. ActivBoard) is used to deliver curriculum.
- Information is passively received.
- Technology is used to communicate through social media, email, etc.
- Technology use is unrelated to the world outside the classroom.
- Student's primarily work alone but may collaborate without technology.
- Technology makes the task easier to implement.
- Technology is used without articulated curricular connection.
- Technology is used without articulated strategic instruction connection.
- User learns how to use the software/hardware (functionality).
- Easy-to-use reliable hardware is essential for technology use.

ADOPTION Level

TECHNOLOGY FRAMEWORK

Technology is used as a substitute for assignments/activities without functional change ●
Teacher controls the students' use and pacing of technology.
  ● Students receive information via technology (ie. Google used to conduct research). ●
Teacher uses technology to deliver content (i.e. worksheets or information using Google
Classroom or Moodle, digital textbooks, links to online resources, posting a video of lecture
online, replacing pen and paper with word processing).
  ● Technology use has some meaningful context beyond the classroom.
  ● Technology is used for this learning task solely.
  ● Technology, strategic instructional strategies and/or content are not integrated clearly
      with instructional plan.

ADAPTATION Level
Technology is used to augment assignments/activities without functional change ●
  Assistive technology tools used to assist diverse learners without changing the task (ie.
  students use speech to text-to-type).
  ● Students collaborate with each other using Google Docs, etc.
  ● Students are provided some choice of tools.
  ● Students are independently using technology tools.
  ● Students are beginning to develop a conceptual and procedural knowledge of the tools.
  ● Technology is beginning to be used to construct knowledge.
  ● Connections between technology, strategic instructional strategies and content are
      somewhat aligned with instructional plan.

INFUSION Level
Technology is used to redesign or modify assignments/activities
  ● Effective integration of technology in lessons.
  ● Technology is used to communicate ideas in powerful ways.
  ● Technology is used to make meaningful connections to the lives and interests of students
      beyond the classroom.
  ● Technology is used to regularly collaborate and construct new meaning.
  ● A variety of technology tools are consistently available to students.
  ● Students independently choose the appropriate technology to accomplish their tasks ○
      *Except where the technology itself is being learned, technology is in the background to
      the learning.*
  ● Technology chosen allows for improvement of the design of assignments/activities. ●
Technology, strategic instructional strategies, and content function well together to meet
the goals of the instructional plan.

TRANSFORMATIONAL Level
Technology is used to allow for a completely new, previously inconceivable
assignment/activity
  ● Students confidently know why and how to select appropriate tools to assist or
      demonstrate learning.
  ● Teacher guides, mentors and models technology use.

TECHNOLOGYFRAMEWORK

      ● Technology is used regularly to collaborate within and beyond the classroom (i.e. tap

outside experts).
● Technology use allows for extensions and creations beyond the classroom. ●
Technology advances learning (i.e. used to build, design, create, & innovate). ● A variety
of technology tools are intentionally selected during the design of Powerful Learning.
● Technology is consistently and seamlessly integrated into classroom routines. ●
Technology selections are exemplary given the curricular goals and strategic instructional
strategies (i.e. challenging, intellectually engaging, authentic audience and task, real-world
problems, inquiry-based, competencies based, fosters critical and creative thinking, allows
for student choice and voice).
● Technology, strategic instructional strategies, content and pedagogy are seamlessly
integrated in instructional plan.

Digital Integration

To see specific examples of how technology can be meaningfully integrated in classrooms, click
these links.

The Matrix - By Subject

The Matrix - By Grade Level

Digital Citizenship

Golden Hills recognizes that Digital Citizenship is essential for students. Golden Hills has
developed an Administrative Procedure to guide administrators and teachers around
appropriate use of digital technologies in the classroom.. The focus is on respecting and
protecting oneself, others, and intellectual property. There are multiple themes to guide teachers
and administrators around Digital Citizenship:
● Theme One: Respect and Protect Yourself (Digital Well-Being)
○ Digital Security
○ Digital Rights and Responsibilities
○ Digital Health and Wellness
● Theme Two: Respect and Protect Others (Digital Interactions)
○ Digital Etiquette
○ Digital Communication
○ Digital Access
● Theme Three: Respect and Protect Intellectual Property and other Property (Digital
Preparedness)
○ Digital Law
○ Digital Literacy
○ Digital Commerce

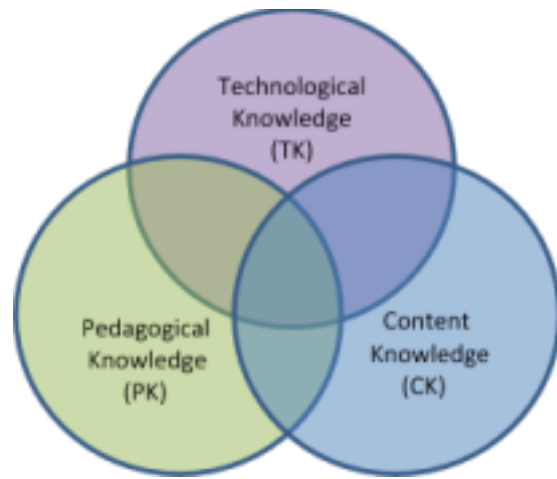TECHNOLOGYFRAMEWORK

Appendices

Appendix A: TPACK

TECHNOLOGYFRAMEWORK

The International Society of Technology in Education supports the use of the Technological Content and Pedagogical Knowledge (TPACK) model to ensure effective integration of technology in learning. Dr. Matthew Koehler explains that "TPACK attempts to identify the nature of knowledge required by teachers for technology integration in their teaching, while addressing the complex, multifaceted and situated nature of teacher knowledge" (TPACK.org).

Students use digital most effectively when teachers prepare learning opportunities that allow students to engage in concept attainment through effective pedagogical strategies, which utilize appropriate digital for the context of the learners and the learning environment. Teachers need to select the most appropriate form to ensure that students have the skills to critically choose the most appropriate way to build knowledge, collaborate, create, and share learning (Fullan again pg 82). Ultimately, students will be able to independently select the best digital form for the task.

It is important to note that digital literacy does not mean that digital is used continuously. Rather, it means that it is intentionally selected to serve the purpose of gaining a Deep Understanding of concepts and to acquire lifelong digital literacy. Furthermore, when digital is used as an effective means to support and enhance learning, it becomes seamlessly integrated in student learning.

Technological Content and Pedagogical Knowledge (TPACK)
Model of Technology Integration

Appendix B: SAMR

Beyond the TPACK model, educators wishing to use digital in their classrooms with the greatest impact will benefit from familiarity with the SAMR (Substitution, Augmentation, Modification, Redefinition) model developed by Dr. Rueben Puentedura. This model illustrates how technology progressively increases in effectiveness with strategically designed learning tasks.

With the SAMR model, educators typically begin by using technology to substitute traditional learning tasks (ie. replacing handwriting with typing). In this stage, there is no measurable gain in the learning experience, except the ease of revision for the student and possibly the readability for the teacher. Educators may start augmenting the learning task with technology (replacing sticky-note peer feedback with real-time online collaboration). The task has greater learning value for students and the process is more time efficient than it was previously. In these stages of technology use, the learning tasks have been enhanced. The student and teacher become familiar with various programs and devices but skill development is often restricted to specific contexts, such as Google Docs or similar online learning spaces.

The SAMR model illustrates how technology can be harnessed to not only enhance, but transform learning experiences. When learning tasks are designed to modify traditional learning

(students collaborate simultaneously to brainstorm ideas, then investigate, research, and co-write assignments), the students develop a deeper understanding of the content while gaining diverse digital literacy skills. Additionally, when students are exposed to learning tasks that were simply unattainable in traditional settings (online interviews of authors or a VR tour of an ancient city), the learning is redefined through digital. Students who are provided the autonomy to self-select how to demonstrate their new understandings may redefine the quality of evidence an educator collects during the learning cycle. It is this level of transformation, redefinition of learning tasks and evidence of learning, that is the ultimate goal of effective digital use.

Appendix C: Technology Integration Matrix (TIM)

The matrix was created in 2006 to facilitate digital use in classrooms. The Florida Center for Instructional Technology, driven by the pedagogy of students constructing and reflecting on their own learning, has the tools to evaluate a digital lesson; the matrix uses a continuum of practice as well as characteristics of the learning environment. TIM seamlessly teaches skills to students, so they can be both critical consumers and creators of digital. The strengths of this model are in the illustrative examples for teachers to learn from.

The Matrix

The Matrix - By Subject

The Matrix - By Grade Level

Appendix D: Self Reflection Tool

From Liz Kolb's *Smart Classroom-Tech Integration*, these questions will help a teacher determine if the use of digital in the classroom is effective integration of technology.

Questions to Guide Practice

1. Does the technology allow students to focus on the task of the assignment or activity with little potential distraction?
2. Does the technology motivate students to start the learning process?
3. Does the technology cause a shift in the behavior of the students, where they move from passive to active social learners?
4. Does the technology tool aid students in developing or demonstrating a more sophisticated understanding of the content, creating opportunities for creation/production over consumption?
5. Does the technology create scaffolds to make it easier to understand concepts or ideas?

6. Does the technology create paths for students to demonstrate their understanding of the learning goals in a way that they could not do with traditional tools?

7. Does the technology create opportunities for students to learn outside of their typical school day?

8. Does the technology create a bridge between school learning and everyday life experiences?

9. Does the technology allow students to build skills that they can use in their everyday lives?

Appendix E: Alberta Education Learning and Technology

Policy

Alberta Education's five directions for learning and technology: student-centered learning, research and innovation, professional learning, leadership, and access, infrastructure and digital learning environments; also guide this framework.

Student-Centered Learning

Effective use of technology allows educators to facilitate "student-driven learning, collaboration, personalization and flexibility" through which students become fluent in digital literacy" (OECD,

2017c, p. 46).

Student-centered learning environments have:
- A focus on the students rather than the teacher.
- Provisions for individual needs, interests, aspirations, and cultural diversities of students.
- Inclusion of students in decision-making to enhance leadership skills. ● Students actively engaged in their learning experiences.

Autonomous learning can happen in a digital classroom when students are able to access information at the very moment they become curious. This access lessens the focus on teachers

being "knowledge keepers" and more focus on teachers as activators of learning.

Digital can be utilized to enhance student-centered learning by allowing choice in product creation, where students select the medium to demonstrate concept understanding in any subject area. Ownership of evidence of learning further deepens the understanding and develops digital literacy through the creation of multimedia artifacts. "Fluency with new technologies involves not only knowing how to use technological tools, but also knowing how to construct things of significance with those tools" (Papert & Resnick, 1995, as cited in Resnick, n.d., p. 2).

Digital provides previously unattainable learning opportunities for students. From online meeting rooms to meeting with experts, to the use of virtual reality to experience distant places, digital can allow students to surpass the restrictions of classroom and obtain an authentic audience. This deepens the learning and understanding.

Research and Innovation
As with all teaching practices, it is essential to keep pace with research and innovation. John Seely Brown refers to the reality of our lives as 'white water times;' a metaphor describing the agility needed to stay current in today's climate, let alone what our students will need to navigate their futures. The work of a teacher is not to keep pace with technology but to prepare students for the agility needed to accept and adapt to continual change.

Professional Learning
Golden Hills encourages teachers to build their capacity in utilizing technology effectively in the classroom. Formal opportunities exist from various external organizations. However, much can be learned through online sources such as social media, YouTube, online articles or courses. Golden Hills also helps teachers build capacity through internal opportunities. Instructional Coaches work collaboratively with teachers, one on one or in groups, to plan, model, and co-teach lessons rich in technology. Collaborative Days also provide an opportunity for digital growth and understanding.

At the school level, teacher professional learning communities co-develop lessons and reflect on their effectiveness. Furthermore, teachers celebrate and share with each other successes across grade levels. These opportunities enrich the learning experiences and are shared through school websites and social media.

Students themselves are a resource to teachers. Allowing students to choose appropriate technologies for their learning or demonstration of understanding will build teacher and student capacity. Students also develop critical thinking, problem solving, and persistence when they learn how to use a new piece of technology on their own. When using technology, students are risk-takers and resilient; they can and will explore to learn what they do not know and support each other in a collaborative environment.

Leadership

Leaders provide clarity and coherence around digital so that teachers have a guide and reference for their understanding. The Technology Framework informs school education plans around guidelines and to help build teacher capacity around leveraging digital. Student centered learning is the focus, as outlined in Alberta Learning and Technology Policy Framework.

Access, Infrastructure and Digital Learning Environments

Golden Hills' Technology Framework is supported by the Golden Hills Technology Department to ensure that the infrastructure for digital is secure and accessible.

Appendix F: Resources for Teachers

SAMR examples

Be Internet Awesome with Google

Common Sense Media: Digital Citizenship

Media Smarts: Digital Citizenship

Appendix G: Reference List

This tool was created by referring to and referencing pieces of many models, frameworks, and matrixes to frame technology use in Golden Hills.

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