Instructional Technology

Technology Integration Matrix

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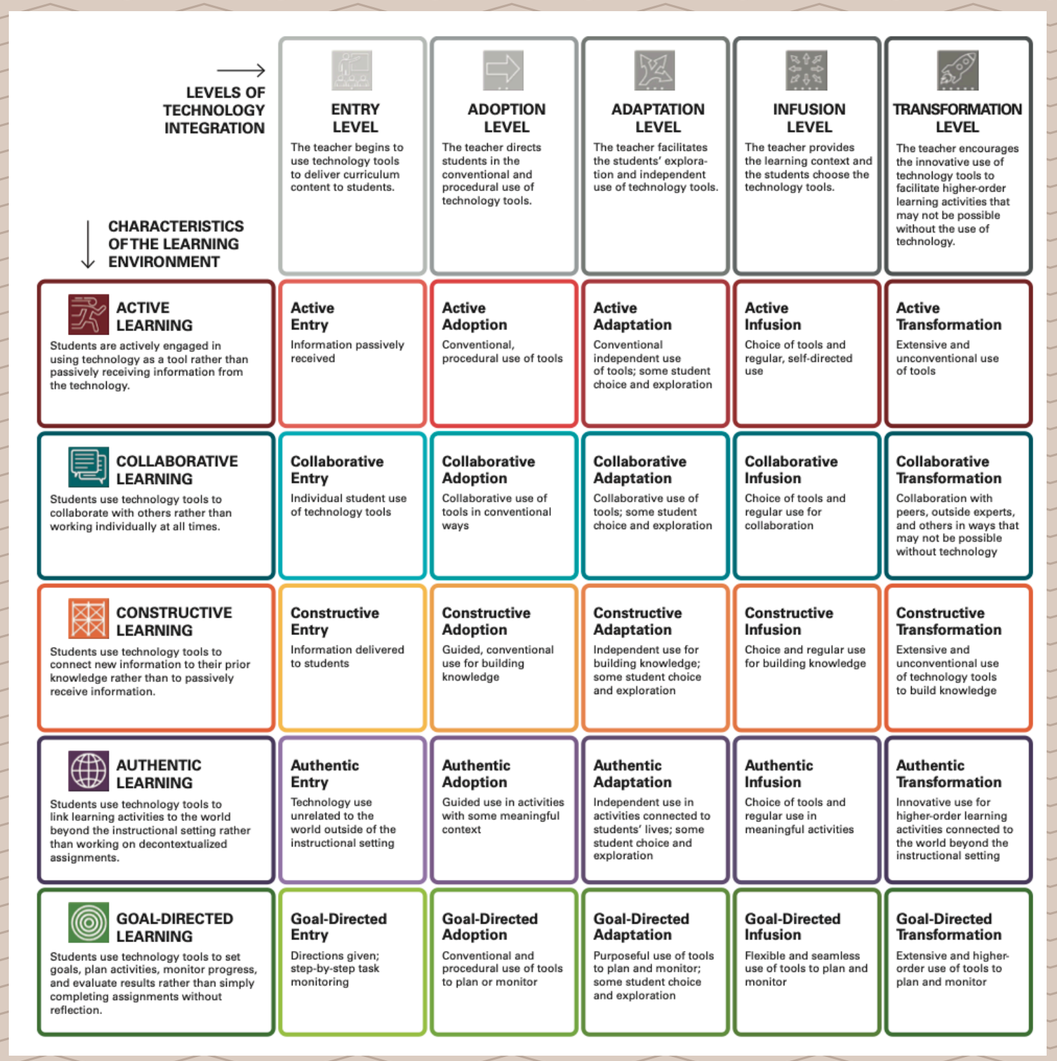
Overview

The Technology Integration Matrix (TIM) evaluates technology integration in classrooms. It is designed for teachers, leaders, coaches, researchers, and facilitators. The TIM is based on constructivist learning and teacher practice research. It focuses on evaluating lessons.

Teacher

Student

Instructional Setting



LEVELS OF TECHNOLOGY INTEGRATION → / CHARACTERISTICS OF THE LEARNING ENVIRONMENT ↓	ENTRY LEVEL The teacher begins to use technology tools to deliver curriculum content to students.	ADOPTION LEVEL The teacher directs students in the conventional and procedural use of technology tools.	ADAPTATION LEVEL The teacher facilitates the students' exploration and independent use of technology tools.	INFUSION LEVEL The teacher provides the learning context and the students choose the technology tools.	TRANSFORMATION LEVEL The teacher encourages the innovative use of technology tools to facilitate higher-order learning activities that may not be possible without the use of technology.
ACTIVE LEARNING Students are actively engaged in using technology as a tool rather than passively receiving information from the technology.	**Active Entry** Information passively received	**Active Adoption** Conventional, procedural use of tools	**Active Adaptation** Conventional independent use of tools; some student choice and exploration	**Active Infusion** Choice of tools and regular, self-directed use	**Active Transformation** Extensive and unconventional use of tools
COLLABORATIVE LEARNING Students use technology tools to collaborate with others rather than working individually at all times.	**Collaborative Entry** Individual student use of technology tools	**Collaborative Adoption** Collaborative use of tools in conventional ways	**Collaborative Adaptation** Collaborative use of tools; some student choice and exploration	**Collaborative Infusion** Choice of tools and regular use for collaboration	**Collaborative Transformation** Collaboration with peers, outside experts, and others in ways that may not be possible without technology
CONSTRUCTIVE LEARNING Students use technology tools to connect new information to their prior knowledge rather than to passively receive information.	**Constructive Entry** Information delivered to students	**Constructive Adoption** Guided, conventional use for building knowledge	**Constructive Adaptation** Independent use for building knowledge; some student choice and exploration	**Constructive Infusion** Choice and regular use for building knowledge	**Constructive Transformation** Extensive and unconventional use of technology tools to build knowledge
AUTHENTIC LEARNING Students use technology tools to link learning activities to the world beyond the instructional setting rather than working on decontextualized assignments.	**Authentic Entry** Technology use unrelated to the world outside of the instructional setting	**Authentic Adoption** Guided use in activities with some meaningful context	**Authentic Adaptation** Independent use in activities connected to students' lives; some student choice and exploration	**Authentic Infusion** Choice of tools and regular use in meaningful activities	**Authentic Transformation** Innovative use for higher-order learning activities connected to the world beyond the instructional setting
GOAL-DIRECTED LEARNING Students use technology tools to set goals, plan activities, monitor progress, and evaluate results rather than simply completing assignments without reflection.	**Goal-Directed Entry** Directions given; step-by-step task monitoring	**Goal-Directed Adoption** Conventional and procedural use of tools to plan or monitor	**Goal-Directed Adaptation** Purposeful use of tools to plan and monitor; some student choice and exploration	**Goal-Directed Infusion** Flexible and seamless use of tools to plan and monitor	**Goal-Directed Transformation** Extensive and higher-order use of tools to plan and monitor

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Purpose:

Evaluates technology integration in classrooms.

Audience:

Teachers, school leaders, coaches, researchers, evaluators, and professional development facilitators.

Focus:

Evaluates lessons, not teachers or individual tasks.

SAMR

SAMR is simpler; TIM provides a more nuanced, research-backed framework.

SAMR = Focuses on tech substitution & transformation at the task level.

TIM = Focuses on learning environment and pedagogical depth across an entire lesson.

TPACK = Intersection of Technology, Pedagogy, and Content Knowledge.

TPACK

TIM Matrix

TIM = Offers a practical way to evaluate how pedagogy and tech are applied in lessons.

ISTE = Focus on what students and educators should be able to do with tech.

TIM supports implementation of ISTE by encouraging active, authentic, goal-directed learning.

ISTE Standards

Both emphasize thoughtful, purposeful integration of tech aligned to content and pedagogy.

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Addressing Common Misconceptions

Not Just for Experts

The TIM is accessible to all educators, regardless of tech skills.

Assesses Lessons, Not Teachers

The TIM evaluates lessons and technology integration.

Versatile Across Subjects

The TIM is applicable across all subjects and educational levels.

Many think TIM requires expensive technology, but it is versatile. Some assume TIM is static, but it is flexible and adaptable.

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Teacher Descriptors

Entry Level

Teacher uses technology to deliver curriculum content.

Adoption Level

Teacher directs students in conventional use of technology.

Adaptation Level

Teacher facilitates independent use of technology.

Infusion Level

Teacher provides context; students choose technology tools.

Transformation Level

Teacher encourages innovative use of technology for higher-order learning.

TIM: Table of Teacher Descriptors, Page 1 of 2

This table contains the teacher descriptors for each cell of the Technology Integration Matrix (TIM).

	ENTRY	ADOPTION	ADAPTATION	INFUSION	TRANSFORMATION
ACTIVE	The teacher may be the only one actively using technology. This may include using presentation software to support delivery of a lecture. The teacher may also have the students complete "drill and practice" activities on computers to practice basic skills, such as typing.	The teacher controls the type of technology and how it is used. The teacher may be pacing the students through a project, making sure that they each complete every step in the same sequence with the same tool. Although the students are more active than students at the Entry level in their use of technology, the teacher still strongly regulates activities.	The teacher allows for some student choice and exploration of technology tools. Because the students are developing a conceptual and procedural knowledge of the technology tools, the teacher does not need to guide students step-by-step through activities. Instead, the teacher acts as a facilitator toward learning, allowing for greater student engagement with technology tools.	The teacher guides, informs, and contextualizes student choices of technology tools and is flexible and open to student ideas. Lessons are structured so that student use of technology is self-directed.	The teacher serves as a guide, mentor, and model in the use of technology. The teacher encourages and supports the active engagement of students with technology resources. The teacher facilitates lessons in which students are engaged in higher order learning activities that may not have been possible without the use of technology tools. The teacher helps students locate appropriate resources to support student choices.
COLLABORATIVE	The teacher directs students to work alone on tasks involving technology.	The teacher directs students in the conventional use of technology tools for working with others.	The teacher provides opportunities for students to use technology to work with others. The teacher selects and provides technology tools for students to use in collaborative ways, and encourages students to begin exploring the use of these tools.	The teacher fosters a collaborative learning environment and supports students' meaningful choices in their selection of technology tools for collaboration.	The teacher seeks partnerships outside of the setting to allow students to access experts and peers in other locations, and encourages students to extend the use of collaborative technology tools in higher-order learning activities that may not be possible without the use of technology tools.

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TIM: Table of Teacher Descriptors, Page 2 of 2

This table contains the teacher descriptors for each cell of the Technology Integration Matrix (TIM).

	ENTRY	ADOPTION	ADAPTATION	INFUSION	TRANSFORMATION
CONSTRUCTIVE	The teacher uses technology to deliver information to students.	The teacher provides some opportunities for students to use technology in conventional ways to build knowledge and experience. The students construct meaning about the relationships between prior knowledge and new learning, but the teacher makes the choices regarding technology use.	The teacher creates instruction in which students' use of technology tools is integral to building an understanding of a concept. The teacher gives the students access to technology tools and guides them in exploring and choosing appropriate resources.	The teacher consistently allows students to select technology tools to use in building an understanding of a concept. The teacher provides a context in which technology tools are seamlessly integrated into a lesson, and is supportive of student autonomy in choosing the tools and when they can best be used to accomplish the desired outcomes.	The teacher facilitates higher-order learning opportunities in which students regularly engage in activities that may be impossible to achieve without the use of technology tools. The teacher encourages students to explore the use of technology in unconventional ways and to use the full capacity of multiple tools in order to build knowledge.
AUTHENTIC	The teacher assigns work based on a predetermined curriculum unrelated to the students or issues beyond the instructional setting.	The teacher directs students in the conventional use of technology tools for learning activities that are sometimes related to the students or issues beyond the instructional setting.	The teacher creates instruction that purposefully integrates technology tools and provides access to information on community and world issues. The teacher directs the choice of technology tools but students use the tools on their own, and may begin to explore other capabilities of the tools.	The teacher encourages students to use technology tools to make connections to the world outside of the instructional setting, and to their lives and interests. The teacher provides a learning context in which students regularly use technology tools and have the freedom to choose the tools that, for each student, best match the task.	The teacher encourages innovative use of technology tools in higher-order learning activities that support connections to the lives of the students and the world beyond the instructional setting
GOAL-DIRECTED	The teacher gives students directions and monitors step-by-step completion of tasks. The teacher sets goals for students and monitors their progress.	The teacher directs students step by step in the conventional use of technology tools to set goals, plan, monitor, evaluate an activity, or reflect upon learning activities.	The teacher selects the technology tools and clearly integrates them into the lesson. The teacher facilitates students' independent use of the technology tools to set goals, plan, monitor progress, evaluate outcomes, and reflect upon learning activities. The teacher may provide guidance in breaking down tasks.	The teacher creates a learning context in which students regularly use technology tools to set goals, plan, monitor, evaluate outcomes, and reflect upon learning activities. The teacher facilitates students' choice and independent use of technology tools to accomplish these tasks.	The teacher creates a rich learning environment in which students regularly engage in higher-order planning, monitoring, evaluative, and reflective activities that may be impossible to achieve without technology. The teacher sets a context in which students are encouraged to use technology tools in innovative ways to direct and reflect on their own learning.

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Scenario Sort

Directions:

Using the empty matrix provided, work with your group and determine where each scenario goes within the matrix. Use your TIM as a guide.

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Student Descriptors

The TIM Student Descriptors outline how student use of technology evolves from passive, teacher-directed tasks to active, self-directed, and innovative learning experiences

As students progress through the TIM levels, they gain greater autonomy, apply higher-order thinking, and use technology in increasingly meaningful and authentic ways

Entry Level

Students receive information via technology.

Adoption Level

Students use technology in conventional ways, directed by the teacher.

Adaptation Level

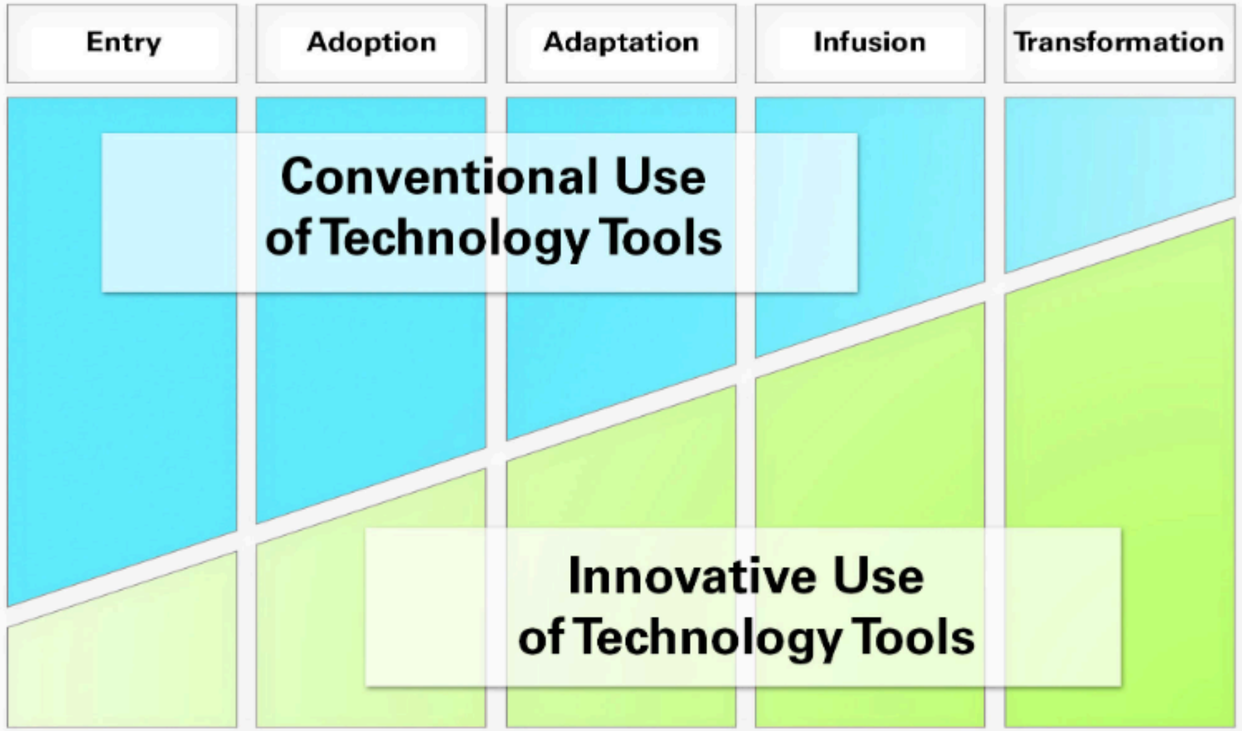
Students begin independent use of technology.

Infusion Level

Students regularly use technology tools independently.

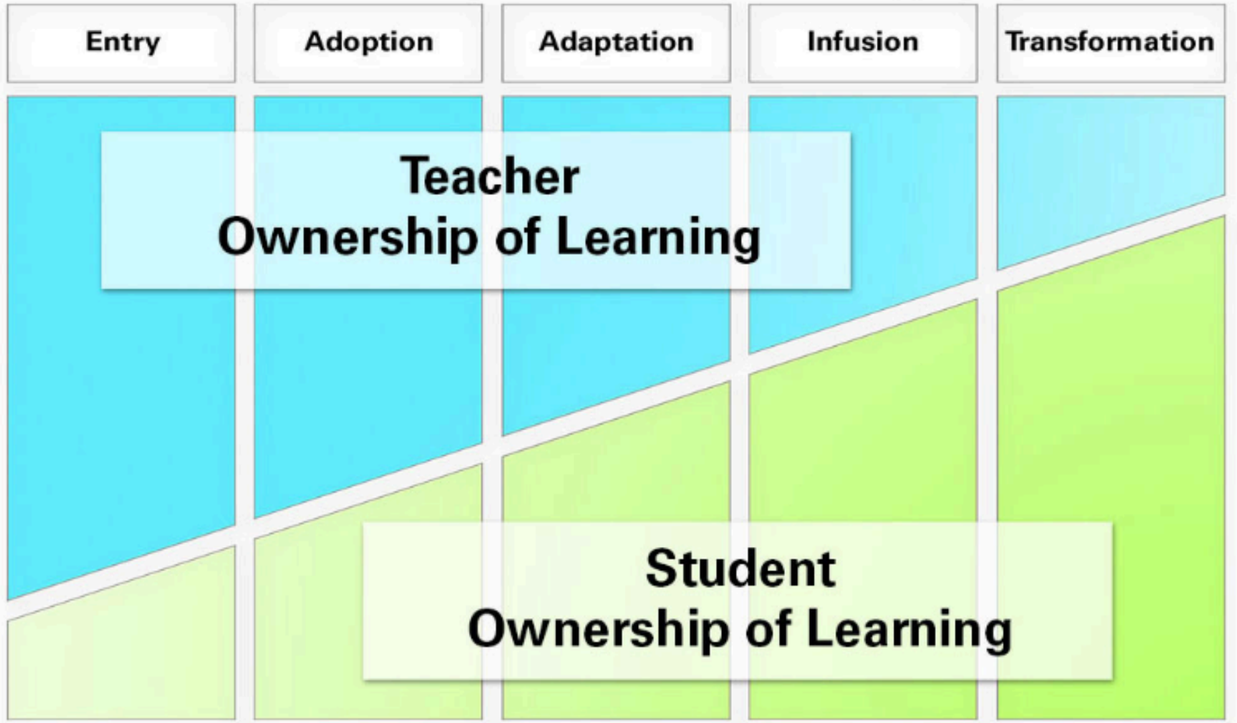
Transformation Level

Students use technology in creative ways for higher-order thinking.



Tech Tools:
Conventional use
v.
Innovative use

Ownership:
Teacher v. Student



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TIM: Table of Student Descriptors

This table contains student descriptors for each cell of the Technology Integration Matrix (TIM).

	ENTRY	ADOPTION	ADAPTATION	INFUSION	TRANSFORMATION
ACTIVE	Students receive information from the teacher or from other sources. Students may be watching an instructional video on a website or using a computer program for "drill and practice" activities.	Students use technology in conventional ways and are closely directed by the teacher.	Students work independently with technology tools in conventional ways. Students are developing a conceptual understanding of technology tools and begin to engage with these tools.	Students understand how to use many types of technology tools, are able to select tools for specific purposes, and use them regularly.	Students have options on how and why to use different technology tools for higher-order thinking tasks. They often use tools in unconventional ways and the technology itself becomes an invisible part of the learning.
COLLABORATIVE	Students primarily work alone when using technology. Students may collaborate without using technology tools.	Students have opportunities to use collaborative tools, such as email, in conventional ways. These opportunities for collaboration with others through technology, or in using technology, are limited and are not a regular part of their learning.	Students independently use technology tools in conventional ways for collaboration. Students are developing a conceptual understanding of the use of technology tools for working with others.	Technology use for collaboration by students is regular and normal in this setting. Students choose the best tools to use to accomplish their work.	Students regularly use technology tools to collaborate with peers, experts, and others who may be in different locations and may represent different experiences, cultures, and points of view.
CONSTRUCTIVE	Students receive information from the teacher via technology.	Students begin to utilize technology tools to build on prior knowledge and construct meaning.	Students begin to use technology tools independently to facilitate construction of meaning. With their growing conceptual understanding of the technology tools, students can explore the use of these tools as they are building knowledge.	Students consistently have opportunities to select technology tools and use them in the way that best facilitates their construction of understanding.	Students use technology to construct and share knowledge in ways that may not be possible without technology. Their deep understanding of the technology tools allows them to extend the use of the tools in creative ways to construct meaning.
AUTHENTIC	Students use technology to complete assigned activities that are generally unrelated to the world beyond the instructional setting.	Students have opportunities to apply technology tools to some content-specific activities that are related to the students or issues beyond the instructional setting.	Students begin to use technology tools on their own in activities that have meaning beyond the instructional setting.	Students select appropriate technology tools to complete activities that have a meaningful context beyond the instructional setting. Students regularly use technology tools, and are comfortable in choosing and using the tools in the most meaningful way for each activity.	Students explore and extend the use of technology tools to participate in higher-order learning activities that have meaning in the world beyond the instructional setting. Students regularly engage in activities that may not be possible without the use of technology.
GOAL-DIRECTED	Students may receive directions, guidance, and/or feedback via technology.	Students follow procedural instructions to use technology in conventional ways to set goals, plan, monitor, evaluate, or reflect upon an activity.	Students independently use technology to set goals, plan, monitor, evaluate, and reflect upon specific activities. Students explore the use of the technology tools for these purposes.	Students regularly use technology independently to set goals, plan activities, monitor progress, evaluate results, and reflect upon learning activities. The students may choose from a variety of technologies when working on self-directed goals.	Students engage in ongoing metacognitive activities, and work on self-directed goals, at a level only possible with the support of technology. Students are empowered to extend the use of technology tools and have greater ownership and responsibility for learning.

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GROUPS

A

1

Jen
Erin
Tommy
Melissa
Wendy

2

Jimmy
Tim
Natasha
Krynica

3

Shannon
James
Dominique’
Krystle

4

Neff
Nia
Tanika
Tonya
Allison

5

Jan
Lynn
EJ
Ruben
Andrea

Drag + Drop

Directions

Place each scenario in the appropriate table with its corresponding level of technology integration and characteric of the learning environment.

Group #1

Group #2

Group #3

Group #4

Group #5

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	ENTRY	ADOPTION	ADAPTATION	INFUSION	TRANSFORMATION
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COLLABORATIVE	Students primarily work alone when using technology. Students may collaborate without using technology tools.	Students have opportunities to use collaborative tools, such as email, in conventional ways. These opportunities for collaboration with others through technology, or in using technology, are limited and are not a regular part of their learning.	Students independently use technology tools in conventional ways for collaboration. Students are developing a conceptual understanding of the use of technology tools for working with others.	Technology use for collaboration by students is regular and normal in this setting. Students choose the best tools to use to accomplish their work.	Students regularly use technology tools to collaborate with peers, experts, and others who may be in different locations and may represent different experiences, cultures, and points of view.
CONSTRUCTIVE	Students receive information from the teacher via technology.	Students begin to utilize technology tools to build on prior knowledge and construct meaning.	Students begin to use technology tools independently to facilitate construction of meaning. With their growing conceptual understanding of the technology tools, students can explore the use of these tools as they are building knowledge.	Students consistently have opportunities to select technology tools and use them in the way that best facilitates their construction of understanding.	Students use technology to construct and share knowledge in ways that may not be possible without technology. Their deep understanding of the technology tools allows them to extend the use of the tools in creative ways to construct meaning.
AUTHENTIC	Students use technology to complete assigned activities that are generally unrelated to the world beyond the instructional setting.	Students have opportunities to apply technology tools to some content-specific activities that are related to the students or issues beyond the instructional setting.	Students begin to use technology tools on their own in activities that have meaning beyond the instructional setting.	Students select appropriate technology tools to complete activities that have a meaningful context beyond the instructional setting. Students regularly use technology tools, and are comfortable in choosing and using the tools in the most meaningful way for each activity.	Students explore and extend the use of technology tools to participate in higher-order learning activities that have meaning in the world beyond the instructional setting. Students regularly engage in activities that may not be possible without the use of technology.
GOAL-DIRECTED	Students may receive directions, guidance, and/or feedback via technology.	Students follow procedural instructions to use technology in conventional ways to set goals, plan, monitor, evaluate, or reflect upon an activity.	Students independently use technology to set goals, plan, monitor, evaluate, and reflect upon specific activities. Students explore the use of the technology tools for these purposes.	Students regularly use technology independently to set goals, plan activities, monitor progress, evaluate results, and reflect upon learning activities. The students may choose from a variety of technologies when working on self-directed goals.	Students engage in ongoing metacognitive activities, and work on self-directed goals, at a level only possible with the support of technology. Students are empowered to extend the use of technology tools and have greater ownership and responsibility for learning.

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Instructional Setting

Entry Level

Setting arranged for direct instruction; limited access to technology.

Adoption Level

Setting allows individual work; regulated access to technology.

Adaptation Level

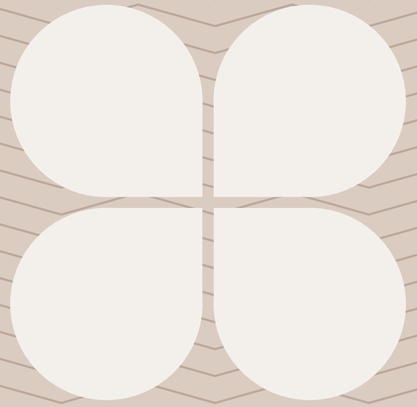
Setting supports independent access to technology.

Infusion Level

Setting includes varied technology tools; flexible arrangement.

Transformation Level

Setting provides robust access to technology for all students.



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TIM: Table of Instructional Setting Descriptors

This table contains the instructional setting descriptors for each cell of the Technology Integration Matrix (TIM).

	ENTRY	ADOPTION	ADAPTATION	INFUSION	TRANSFORMATION
ACTIVE	The setting is arranged for direct instruction and individual work. Any student access to technology resources is limited and highly regulated.	The setting is arranged for direct instruction and individual work. The students have limited and regulated access to the technology resources.	Technology tools are available on a regular basis.	Multiple technology tools are available to meet the needs of all students.	The arrangement of the setting is flexible and varied, allowing different kinds of self-directed learning activities supported by various technologies, including robust access to online resources for all students simultaneously.
COLLABORATIVE	The setting is arranged for direct instruction and individual work.	The setting allows for the possibility of group work, and at least some collaborative technology tools are available.	The setting allows multiple students to access technology tools simultaneously.	Technology tools that allow for collaboration are always available to meet the needs of all students.	Technology tools in this setting connect to text, voice, and video applications and network access has sufficient bandwidth to support the use of these technologies for all students simultaneously.
CONSTRUCTIVE	The setting allows the teacher to present content to all students.	Basic technology tools that allow for building knowledge are available on a limited basis to students for conventional uses.	Technology tools that facilitate the construction of meaning are available to students for conventional uses.	The setting includes a variety of technology tools and access to rich online resources to meet the needs of all students.	The setting includes robust access to a wide variety of technology tools, robust access to online resources and communities, and the ability to publish new content online.
AUTHENTIC	Available resources, chosen by the teacher, are predominately textbook or textbook-like sources, whether digital or print. They are generally used without making connections to a real-world context or to the students' personal lives.	Available resources, chosen by the teacher, may be predominately textbook or textbook-like sources, whether digital or print, and students may have guided access to primary source materials and selected information, data, and source materials beyond the instructional setting.	The setting allows for guided student access to a limited range of information, data, and source materials beyond the instructional setting.	The setting provides a variety of technology tools and ongoing, independent access to a broad range of information, data, and source materials beyond the instructional setting. This access facilitates student pursuit of individual interests and emerging topics.	The setting provides ongoing, independent access to a broad range of information, data, and source materials beyond the instructional setting. Robust, simultaneous access to a variety of technology tools allows all students to engage directly with others who may be in different locations and may represent different experiences, cultures, and points of view.
GOAL-DIRECTED	The setting may include technology tools that allow students to demonstrate skill development and allow tracking of student progress across levels.	The setting includes access to some teacher-selected technology tools that allow students to set goals, plan, monitor, evaluate, or reflect upon their work.	The setting includes access to a variety of technology tools, allowing students some choice in how they set goals, plan, monitor, evaluate, and reflect upon their work.	The setting includes a rich variety of technology tools to allow students many choices in how they set goals, plan, monitor, evaluate, and reflect upon their work.	The setting includes robust access to a rich variety of technology tools and online resources to allow students many choices in how they independently set goals, plan, monitor, evaluate, and reflect upon their work.

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Informing Administrators + Instructional Leaders

Purpose

TIM helps evaluate how technology is leveraged in schools and districts.

Benefits

Provides insights into effective technology integration.

Application

Can guide decisions on technology investments and professional development.

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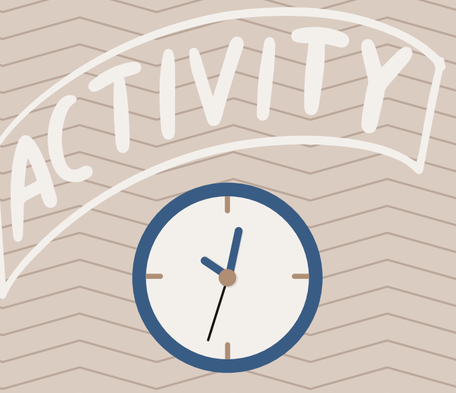

Create your own Scenario

Directions

Create a quick lesson plan (whatever content you desire), aligned to a specific Characterisitic of Learning Environemnt and Level of Tech Integration. Place lesson plan on chart paper. Pick a representative to explain your lesson and where it would fall on the the TIM.

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Thank You!

TIM Website