TIM: Table of Summary Descriptors

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

The Technology Integration Matrix (TIM) provides a framework for describing and targeting the use of technology to enhance learning. The TIM incorporates five interdependent characteristics of meaningful learning environments: active, collaborative, constructive, authentic, and goal-directed. These characteristics are associated with five levels of technology integration: entry, adoption, adaptation, infusion, and transformation. Together, the the five characteristics of meaningful learning environments and five levels of technology integration create a matrix of 25 cells, as illustrated below.

→ 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 students in exploring and independently using technology tools.	INFUSION LEVEL — The teacher provides the learning context and the students choose the technology tools to achieve the outcome.	TRANSFORMATION LEVEL — The teacher encourages the innovative use of technology tools. Technology tools are used to facilitate higher order learning activities that may not have been 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.	Information passively received	Conventional, procedural use of tools	Conventional independent use of tools; some student choice and exploration	Choice of tools and regular, self-directed use	Extensive and unconventional use of tools
COLLABORATIVE LEARNING — Students use technology tools to collaborate with others rather than working individually at all times.	Individual student use of tools	Collaborative use of tools in conventional ways	Collaborative use of tools; some student choice and exploration	Choice of tools and regular use for collaboration	Collaboration with peers and outside resources in ways not possible without technology
CONSTRUCTIVE LEARNING — Students use technology tools to connect new information to their prior knowledge rather than to passively receive information.	Information delivered to students	Guided, conventional use for building knowledge	Independent use for building knowledge; some student choice and exploration	Choice and regular use for building knowledge	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.	Use unrelated to the world outside of the instructional setting	Guided use in activities with some meaningful context	Independent use in activities connected to students' lives; some student choice and exploration	Choice of tools and regular use in meaningful activities	Innovative use for higher order learning activities in a local or global context
GOAL-DIRECTED LEARNING — Students use technology tools to set goals, plan activities, monitor progress, and evaluate results rather than simply completing assignments without reflection.	Directions given; step-by-step task monitoring	Conventional and procedural use of tools to plan or monitor	Purposeful use of tools to plan and monitor; some student choice and exploration	Flexible and seamless use of tools to plan and monitor	Extensive and higher order use of tools to plan and monitor

	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 each 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 chooses which technology tools to use and when to use them. 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 encourages students to use technology tools collaboratively.	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 have been possible without the use of technology tools.

	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 are constructing meaning about the relationships between prior knowledge and new learning, but the teacher is making the choices regarding technology use.	The teacher has designed a lesson 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 to 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 have been impossible to achieve without the use of technology tools. The teacher encourages students to explore the use of technology tools 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 uses technology to give students directions and monitor step-by-step completion of tasks. The teacher monitors the students' progress and sets goals for each student.	The teacher directs students step by step in the conventional use of technology tools to either plan, monitor, or evaluate an activity. For example, the teacher may lead the class step by step through the creation of a KWL chart using concept mapping software.	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, and evaluate outcomes. For example, in a given project, the teacher may select a spreadsheet program that students use independently to plan and monitor progress. The teacher may provide guidance in breaking down tasks.	The teacher creates a learning context in which students regularly use technology tools for planning, monitoring, and evaluating learning activities. The teacher facilitates students' selection of technology tools.	The teacher creates a rich learning environment in which students regularly engage in higher order planning activities that may have been impossible to achieve without technology. The teacher sets a context in which students are encouraged to use technology tools in unconventional ways that best enable them to monitor their own learning.

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 are using technology in conventional ways and the locus of control is on 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, and often extend the use of tools in unconventional ways. Students are focused on what they are able to do with the technology. The technology tools become 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 for collaboration, to work with peers and experts irrespective of time zone or physical distances.
CONSTRUCTIVE	Students receive information from the teacher via technology.	Students begin to utilize technology tools (such as graphic organizers) 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 have been impossible without technology. They have a deep understanding of the technology tools that allows them to explore and extend the use of the tools 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 projects and higher order learning activities that have meaning outside of school. Students regularly engage in these types of activities that may have been impossible to achieve without technology.
GOAL-DIRECTED	Students receive directions, guidance, and/or feedback via technology. For example, students may work through levels of an application that provides progressively more difficult practice activities.	Students follow procedural instructions to use technology to either plan, monitor, or evaluate an activity. For example, students may begin a K-W-L chart using concept mapping application.	Students have opportunities to independently use technology tools to facilitate goal-setting, planning, monitoring, and evaluating specific activities. Students explore the use of the technology tools for these purposes.	Students regularly use technology tools to set goals, plan activities, monitor progress, and evaluate results. The students know how to use, and have access to, a variety of technologies from which they choose. For example, students may choose to write a blog for peer mentoring toward self-selected writing goals.	Students engage in ongoing metacognitive activities at a level that may have been unattainable without the support of technology tools. Students are empowered to extend the use of technology tools and have greater ownership and responsibility for learning.

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 seat work. The students may have very limited and regulated access to the technology resources.	The setting is arranged for direct instruction and individual seat work. The students may have very limited and regulated access to the technology resources.	Technology tools are available on a regular basis.	Multiple technology tools are available in quantities sufficient 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 seat work.	The setting allows for the possibility of group work, and at least some collaborative technology tools are available.	Desks and workstations are arranged so that multiple students can access technology tools simultaneously.	Technology tools that allow for collaboration are permanently located in the setting and are available in sufficient quantities to meet the needs of all students.	Technology tools in this setting connect to text, voice, and video chat applications and network access has sufficient bandwidth to support the use of these technologies for all students simultaneously.
CONSTRUCTIVE	The setting is arranged so that all students can view the teacher's presentation.	Technology tools that allow for building knowledge are available to students for conventional uses on a limited basis.	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 that are available in sufficient quantities 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	Resources available via technology in the instructional setting include primarily textbook supplementary material and reference books or websites, such as encyclopedias.	The setting includes access to information about community and world events and primary source materials.	The setting includes access to information outside of school and primary source materials.	The setting provides a variety of technology tools and access to rich online resources, including information outside of the school and primary source materials, that are available in sufficient quantities to meet the needs of all students.	The setting includes technology tools and online resources that allow for student engagement with the local or global communities. A variety of technology tools are available with robust access for all students simultaneously to information outside of the school and primary source materials.
GOAL-DIRECTED	The setting includes access to skill building websites and applications, including the ability to track student progress across levels.	The setting includes access to technology tools that allow students to plan, monitor, and evaluate their work.	The setting includes access to technology tools (such as graphic organizers, calendars, spreadsheet software, and timeline software) for planning, monitoring progress, and evaluating outcomes.	The setting includes access to a variety of technology tools for planning in sufficient quantities to meet the needs of all students.	The setting includes access to a wide variety of technology tools and robust access to online resources for all students simultaneously.