

Technology Integration: Problem-Based Learning

Issues and Trends in Learning Technologies

Today

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Technology Integration:

Problem-Based Learning Plan Problem-Based learning (PBL), as defined in the article “Teaching & Learning, is “a teaching method in which complex real-world problems are used as the vehicle to promote student learning of concepts and principles as opposed to direct presentation of facts and concepts” (2020). Kristof De Witte et al., (2016) notes that problem-based learning is “an activating instruction method is increasingly gaining ground in education...[and] as an instruction method is considered as a welcome change o the traditional lecturing” (De Witte et al., 2016). In other words, PBL takes on more of a constructivist role where students “are no longer passive learners, but active participants in their learning [allowing] for [more] teamwork, as it encourages inquiry, collaboration, and active participation” (Major et al., 2018).

In real-world experience life involves more than just absorbing lectures and trying to retain information. Hands-on experiences often create better retention for students allowing them to gain stronger critical thinking skills. Students are then able to “develop [as] critical learners who can analyze situations and solve meaningful problems by working cooperatively. [Students] develop ways to organize new knowledge and organize themselves as a collective to create viable solutions to problems” (Major et al., 2018). So, how would one incorporate this type of learning into the classroom and the curriculum?

According to “Teaching & Learning” “any subject area or curriculum can be adapted to PBL with a little creativity [and by incorporating] techniques [like] case studies, role-plays, and simulations” (2020). Genareo et al. (2015) notes that once PBL has been introduced it is easy to break it down in cycles or steps in order to design, implement, and assess in one’s overall courses (Genareo et. al., 2015). The main thing to remember is that students need ideas that pique their interest. Genereo points out that any scenarios created to begin the design for your classroom should be “motivating, interesting, and generate good discussion” (2015). Bates et al., (2014) points out that programs need to be “designed (and mapped) in a way that means that both students and educators are clear about what they are supposed to be doing, what has gone on before, and what will come later in the curriculum” (2014, p. 8). Students are become the driver in their education

versus the passenger. Through this type of learning. Students are expected to communicate, think critically, compromise and collaborate. Teachers are positioned as the facilitators. According to Savery (2006) teachers/instructors must figure out the resources needed, the skills the students will need to work on in order to be successful, and assess what the student will produce in the learning process and at the end (Savery, 2006). In essence, this creates more work for the teacher. “Keeping these complex projects on track while attending to students’ individual learning needs requires artful teaching, as well as industrial-strength project management” (Savery, 2006). The success of any project within a classroom is determined by how much the instructors and the students put into the project. Problem-based learning is no exception. It takes hard work and diligence. Kurt (2020) notes that “Implementing PBL [causes] the teaching role to shift from that of the more traditional model that follows a linear, sequential pattern where the teachers presents relevant material, informs the class what needs to be done, and provides details and information for students to apply their knowledge to a given problem” (Kurt, 2020).

So how would one begin implementing PBL? Kurt (2020) says to work with students, become engaged with “open-ended situations that assimilate the world of work,” find

ways to investigate problems, brainstorm, and then analyze the situation to see what else needs to be solved (Kurt, 2020). There are certain techniques that have been tested and proven to work in the classroom. A few examples given by Kurt (2020) are: dividing the curriculum into various units, determine the specific problem you want your students to solve, provide ample resources, decide on formats of communication (PowerPoint, online blogs, individual paper etc), and add in collaborate learning such as peer reviews and group participation (2020).

According to Bates et al., (2014), “Several studies have shown that students from a PBL curriculum felt better prepared in interpersonal skills, such as communicating [and] managing...problems” (Bates et al., 2014, p. 3). Although research still needs to take place to discover the full effectiveness of problem-based learning, a lot has already been seen through the growth of students and the collaboration of different methods such as flipped-classrooms and group assessments.

Technology Integration

Technology integration, according to the website Edutopia, is “the use of technology resources – computers, mobile devices like smartphones and tablets, digital cameras, social media platforms and networks, software applications, the internet, etc...in daily

classroom practices, and in the management of a school” (“What is Successful”, 2007). This consists of seamless integration where students are using viable technology daily and also have tools and resources to help them “build a deeper understanding of content” (“What is Successful”, 2007).

Technology has truly come a long way since its beginning. As Dinc puts it: “[The] impossible has become possible, and the quality of human life has been improved drastically” because of technology (Dinc, 2019, p. 381). Dinc also adds that “computer-based curriculum increases student performance in the classroom and affects students’ attitudes positively when computers are used as learning tools” (Dinc, 2019, p.381). This is an important aspect of technology integration. Building classes around the idea of the integration is extremely important and creating an atmosphere where students, or even a teacher, doesn’t have to think about the logistics of using technology is a wonderful thing. It should feel like second nature, or as a seamless part of the learning and education process. One of the ways that technology has really integrated into the classroom in the twenty-first century (and especially recently with the pandemic and shutdowns of schools) is through blended classrooms. This requires a little of both types of learning from technology and online to lecture and in-class. Another type of integration is through

game-based learning. This allows teachers and students to bring in learning activities through fun and interactive means. According to guest blogger, Andrew Miller (2011), “Game-based learning...infuses technology with game-based learning, where entire units utilize missions, boss levels, and the like for learning important standards” (Miller, 2011). Miller goes on to state that classroom projects are often based off of whole game units for the entire semester. The created lesson plans for the classroom are set up to “challenge students to complete tasks that will prepare them for the boss level [end of the semester] later in the unit” (Miller, 2011).

So, with so many options to choose from with interactive white boards, social media interaction, web-based projects, and learning with mobile devices (just to name a few), how does one really create a successful environment for technology integration? According to “What is Successful Technology Integration” (2007) “Successful technology integration is achieved when the use of technology is: routine and transparent, accessible and readily available for the tasks, and supporting the curricular goals [by] helping students to effectively reach their goals” (2007).

It is not all sunshine and roses, though, when concerning the integration of technology. Sarah Howard et al. (2015) points out that “Change requires tremendous sophistication as

well as some risk taking [and] adopting new digital technologies and related teaching practices still presents significant change for many teachers [causing] uncertainty and anxiety” (Howard et al., 2015, p. 1351). In agreement, Coklar et al. (2017) adds that “Teachers ability to adapt themselves to rapidly developing technology” is the key to success for the overall classroom structure (Coklar et al., 2017, p.20).

There are a lot of positives and negatives for every new concept, but it seems that the good is certainly outweighing the bad as technology continues to grow by leaps and bounds within the classroom setting. The Technology Integration Matrix was developed by the Florida Center for Instructional Technology and established in 1982; however, according to Timothy Costello (2018) in his article “Technology Integration Matrix (Part 1)” the matrix was a continually evolving process established in 2003-2006 “with a second version completed in 2010-2011” (Costello, 2018). He notes that it has been established and working “for over 30 years with educators in integrating technology into curriculum” (Costello, 2018). Costello notes that the TIM was created to evaluate how technology is being integrated within the classroom.

What does the Matrix do and how is it integrated? Costello points out that there are five characteristics of the learning environment: Active Learning, Collaborative Learning,

Constructive Learning, Authentic Learning, and Goal-Directed Learning. Each level “ascends through increasing levels of technology integration...then climbs through five different levels of integration: Entry, Adoption, Adaption, Infusion, and Transformation” (Costello, 2018).

Active Learning

Active Learning “occurs when students are actively engaged in using technology as a tool rather than passively receiving information from technology” (Costello, 2018). As each stage meets a new challenge, different things are taking place. For example, in Active Entry students might passively watch a video. It then moves to Active Adoption where students will now apply tools in a procedural manner such as writing an essay through Microsoft Word. Active Adaption gives students more choices to integrate through presentation, etc. Active Infusion brings students to a more “self-directed use and choice of tools,” and Active Transformation calls for students to be a little more unconventional in their use of technology such as using green screen video, etc. (Costello, 2018).

Collaborative Learning

Collaborative Learning occurs when students work in units or groups through technology. Collaborative Entry the students learn to use their tools individually, but in Collaborative

Adoption they begin to collaborate with classmates through conventional ways such as editing documents. Collaborative Adaption students explore tools collaboratively where they might choose, for example, an application “to utilize and then work together to complete it” (Costello, 2018). In Collaborative Infusion, allows choice of tools, and finally, in Collaborative Transformation the collaborative groups work together as well as with outside people and resources. An example of this might be, according to Costello, a book study with another class somewhere other than your own district.

Constructive Learning

In Constructive Learning students learn to connect to “new information with their own information rather than just passively receiving the information” (Costello, 2018). Constructive Entry brings information to the student but doesn’t allow for anything else. Constructive Adoption brings in guided knowledge through technology and is very similar to Constructive Adaption but allows for more independent work by students with more choices and exploration. The real change comes in Constructive Infusion. In this level students have constant use of technology of their choice as they build and gain more knowledge. Constructive Transformation is where students now use unconventional use technology.

Authentic Learning

In this level, students incorporate technology with interactive learning activities in and outside of the classroom. One example would be through Problem-Based Learning. Authentic Entry allows learning inside the classroom, and often this is when students struggle the most with attention and interest in the learning material. Authentic Adoption begins to break outside the barriers some and allow outside relevance to the technology tools and learning activities of the students. Adaption level offers choices of exploration of different choices and independent learning that is somehow or in someway connected to their lives. Authentic Infusion takes the adaption to another level creating a more constant interaction with meaningful activities. Authentic Transformation opens technology on a local and/or global context.

Goal-Directed Learning

In this level students use technology to create and plan, set goal, monitor their progress, plan activities, and then evaluate (Costello, 2018). Entry Level is where the instructor gives instructions and monitors through the tasks. Adoption Level is akin to using the tool Google Calendar where students use normal procedures and tools to monitor goals. Adaption allows students to have choices in their use of tools as they strive to meet their

goals. An example of this level might be the platform Google Hangouts where students can meet together to discuss issues with other team members. Infusion is even more flexible and Transformational is often used to plan and monitor progress with the level. Students are fully engaged from the first level all the way through, and the Matrix allows for multiple ways of integrating technology. David Barbour (2014) notes that the TIM has “been widely accepted and utilized as a valid method for measuring technology integration in the individual teacher’s classroom” (Barbour, 2014). Still, Barbour admits that more research still needs to be conducted on student engagement since findings are not conclusive, and yet it is evident that technology integration has a positive influence on student engagement.

The ASSURE Model for Instructional Design

Daesang et al., (2016) describes the ASSURE model as a guide to teachers to help them plan “and deliver lessons that effectively integrate technology into their classroom teaching” (Daesang et al., 2016). In fact, Daesang et al. notes that teachers are constantly being challenged to design new instruction and instructional materials that enhance student engagement and learning activities [because] today’s classrooms are expecting more technology-facilitated learning activities that are not easily accommodated through

traditional instruction” (Daesang, 2016, p. 153). This is not always an easy task to uphold for teachers. In order to compensate, many “teachers rely on models such as ASSURE...to guide [them] how to plan and deliver lessons that effectively integrate technology, media, and materials into classroom teaching” (Daesang, 2016, p. 154).

So, how can ASSURE be implemented, and what does ASSURE consist of? Daesang (2016) goes over the six-step instructional system process: Analyze learners, State Standards and objectives, Select strategies, technology, media, and materials, Utilize technology etc., Require learner participation, and Evaluate and revise.

Analysis of Learners

One of the things that I have struggled with over the years is math. I have strong writing and reading comprehension, but math has always been a struggle. According to an article written by Serhart Kurt “ASSURE: Instructional Design Model” (2016), to analyze your learners it is important to assess general attributes (age, academic abilities, gender, etc), understand prior competencies, and assess learning styles such as auditory, visual, and tactile (Kurt, 2016). To assess the age I went to college against my academic ability (I was out of school for over twenty years), it was easier to see that I would need to take remedial math courses in order to get to the desired level needed. Kurt notes that once the

information is gathered “[It] will help you in the decisions that you make [and] guide you in choosing specific strategies and resources to aid in the learning process” (Kurt, 2016). This truly worked for me. I was able to accomplish the goal after assessing my ability and rearranging my process in order to get the final desired results. This is also the same process that I apply to my students at the community college and the university where I teach. I analyze my students from one semester to the next in order to find what will work with any given class.

Analysis of Technology in the Local Setting

Because I spend time analyzing my students to discover what works with each class (because every class is different from one semester to the next), it is important to have all of the necessary technology tools available. At the university where I work, they upgraded a year ago to expensive high-tech equipment for every classroom. They integrated smart classrooms with touchscreen projectors, interactive whiteboards, up to six monitors per classroom so that every student can see the work that is being entered into the computer, along with connection equipment at each of the six monitors so that students can hook up directly in class and divide into teams for collaborative work. The

smart computer at the main desk in the room allows the teacher to divide the screens accordingly and allow students to work and present one screen at a time.

At the community college where I also work, there are a lot of things that need to be updated. They have just purchased interactive whiteboards for classrooms, but we have been using the old-fashioned erasable boards for classes. There are projectors hooked up to the computer system, but the students do not have access to these in the classroom like at the university. Instead, students have to use a computer lab with desktops to work on projects as a group. I have found using game-based learning is a great way to incorporate all the students and you often only need the projector, one computer, and the students using their own mobile devices. The internet access is great and widely available for all students to use.

With that said, in analyzing my learners, I have found that the students at the community college are much more eager to work and collaborate, spend time digging in and putting forth the effort with minimal technology versus the university students who have so much technology at the tips of their fingers but do not seem to have the same drive and motivation. The university provides internet, dongles to hook up student's computers with multiple access points for different computer types. The community college, in

many ways, cannot compete with the extravagance, but in excellence and dependability, the community college has, at least for me, far outshone the university.

Standards and Objectives

Standards follow the line with well-stated learning objectives such as audience, behavior, conditions, and the degree with which the knowledge will be skilled or mastered. These are critical standards because they help to empower and ensure that students are learning. According to the website Schoology Exchange “By implementing the ISTE Standards for students you are providing a pathway for student voice, choice, and empowerment to achieve their educational goals, accompanied and enhanced by technology” (L., 2018).

In the article “ISTE Standards For Students” (2016), it breaks down the standards as: Empowered Learner, Digital Citizen, Knowledge Constructor, Innovative Designer, Computational Thinker, Creative Communicator, and Global Collaborator. Each of these categories have sub-categories that break define what each heading represents. Typically, I employ the “Empowered Learner” and “Knowledge Constructor” standards in my classes.

The Empowered Learner

The Empowered Learner as defined by “ISTE Standards For Students” (2016) states that “Students leverage technology to take an active role in choosing, achieving, and demonstrating competency in their learning goals, informed by the learning sciences” (2016). Setting goals and creating strategies, building networks to customize their learning environment, using technology to inform and create feedback, and understanding how to troubleshoot and engage in the overall knowledge of emerging technology.

The Knowledge Constructor

The Knowledge Constructor is where students construct knowledge and create “meaningful learning experiences for themselves and others” (“ISTE Standards”, 2016). Students will plan effective research strategies, dig in and find the material and information needed, evaluate the credibility and relevance of the material through data resources, media, and other outlets, learn to retrieve information through technology in a way that builds the material into a collective connection of information, and then explore their real-world knowledge through analyzing issues, developing ideas and theories, and then pursuing answers and solutions (“ISTE Standards”, 2016).

Educational Standards Employed

According to the website Education World, standards should be: Aligned with college and work expectations, clear and consistent, include content and application, build upon strengths, and prepare students to succeed in education and society” (“Common Core”, 2016).

Three Curriculum Standards used for Language Arts are:

- a.) Reading for Perspective and Understanding
- b.) Developing Research Skills
- c.) Evaluating Data and Applying the Knowledge

Three ISTE Standards for Students included in a lesson plan should include:

- a.) Empowered Learner: setting goals, understanding their learning environments, using technology to improve and build inside and outside the classroom, achieve competency in learning goals and then demonstrate that competency.

- b.) Knowledge Constructor: Understand and contextualize online information, dig in and find reliable and viable information through technology use, and learning about reliability, credibility, and bias through critical thinking.
- c.) Creative Communicator: Students learn to concisely express their ideas, thoughts and opinions through digital media. Students understand how to communicate, visualize their ideas through digital sources, and then follow through with publishing and presenting to a specific audience.

Three specific measurable learning objectives for the class lesson would be:

- 1) Students will demonstrate written, oral, and visual literacy skills toward the assigned literature, literary terms, and texts. Students will recognize different interpretations and points of view toward the overall scope of the assigned project. **Example:** The student will be able to annotate the two texts assigned and compare and contrast the experiences of the main characters through the use of a Ven Diagram. Students will also be able to demonstrate understanding of the texts by writing a Thematic Analysis covering the two texts assigned.
- 2) Students will demonstrate creative and critical thinking skills through analysis, evaluation, and inquiry into the historical background concerning

the texts assigned. Students will be able to effectively interpret the literature through applying critical theory to literary texts, produce professional-level academic writing, and proper use of the conventions of research. **Example:** Students will be able to apply the proper use of technology through digital research skills by creating an 8-10-page research paper with 8-10 scholarly journals containing a historical and analytical look at the text(s) assigned.

- 3) Students will demonstrate literacy skills through writing, oral, and visual communication. Students will effectively be able to work in an individual capacity or with others to support different points of view and a shared purpose or goal. Learners will prove accessible knowledge toward technological aspects of the class including but not limited to PowerPoint, Google Docs, Zoom, and Microsoft Word. Example: Students will be able to convey their thoughts and ideas through rhetorical or stylistic analysis of the text(s) assigned by producing a fifteen-minute PowerPoint Presentation detailing their overall perspective, analysis, and contextual view of the material.

Planning the Strategies, Technology, Media, and Materials

Understanding the strategies and goals for any given class is extremely important. Some of the main strategies that I often employ within my college classes are: Activating Strategy, Limited Lecture, Student-Centered, and Game-Based Learning. With these four learning patterns, I am able to actively engage students, control the atmosphere of the room, and reinforce the lessons being taught. Since I teach literature and composition classes, these strategies are essential in order to keep students engaged and active in the lesson process. This approach uses the “Constructive” method (TIM), and the student receives knowledge through technology.

Activating Strategy

In the beginning of class, I always make sure that I have the overhead projector or interactive Whiteboard up and ready to go. I introduce new literature and composition concepts through interactive videos, YouTube analysis videos, funny cartoons, popular GIF’s or memes. Then I effectively use the technology aspect to link to the overall the lesson. This strategy, according to *Edutopia*, “gets students actively thinking or making a connection to the content [and] the outside world” to engage their understanding (“10 Powerful Instructional Strategies”, 2011).

Limited Lecture

After getting their attention through technology and media, I bring in the main lecture keeping it between 12-15 minutes. Before the lecture I make sure students have some type of notes or activity. I have frequently used the “Escape Room” method during Lecture. Each student is given a set of questions concerning the text(s) being discussed along with sheet of puzzles, different levels to get through, and other activities that must be completed before the end of the class. I often encourage them to work while we discuss the story in lecture time. This activity also works really well when students are broken down into groups. I have also used groups to map out the text(s) while lecturing to keep them actively involved in the lesson. This approach brings in the “Collaborative” method (TIM) where students can use the resources available to them to work as an individual or with other students.

Student Centered & Game-Based Approach

Lastly, I test their knowledge by bringing in the game-based approach. We have competitive challenges through Kahoot! and Jeopardy through online forums. We also do speed-discussion (much like a speed-dating challenge) through round-table forums. I keep the focus on the students and how they can contribute to the overall lesson. In this approach, students are more engaged with technology instead of becoming the passive learner. Now they are Active Learners (TIM).

The main problem encountered is that the technology varies at the community college versus the university. I often have to readjust my lessons accordingly to be able to work in the technology needed. I employ the use of the interactive whiteboard and class monitors when we are doing game-based learning at the university. We also have touchscreen projectors that allow easier access when showing films or videos to the class. For the community college we have projectors hooked up to computers so there is easy internet access. This helps when watching videos or playing learning games within the class. With many of the interactive games (like Kahoot! and Quizlet), students can access the site and log into the teacher's set up in order to play the game together as a class and see the results on the big projector screen in the classroom.

Collaborative Learning, Adoption

The Adoption Level consists students using technology in a conventional way, but collaboratively.

Students: Students have access to collaborative tools such as email, discussion boards, peer reviews.

Teacher: The teacher/instructor still directs the students in the conventional use of technology

Setting: Allows for possibilities of group work through in-class or online technology.

In order to complete collaborate Peer Reviews in literature, I will use:

1. Canvas—a learning tool that supports instructors, students, and widespread collaboration. www.instructure.com
2. Assign the paper and set up the structure to include Peer Reviews and assigning of students.
3. Student's documents (800-1000-word essay) will be typed in Microsoft Word and uploaded to the submit assignment link within Canvas.
4. Once Peer Review is opened the Canvas editing table (which all students will have access to through Canvas) will then be available to students to allow commenting and suggestions for the review.
5. I will include a Screencast-o-Matic instruction video into the appropriate module (from www.screencast-o-matic.com that I will make ahead of time) walking through the procedure of how to access your Peer Review document, how to access the editing software, the expectations for reviewing another student's essay, Peer Review guidelines, and how to submit your reviewed document back to Canvas for grading and approval. Screencast-O-Matic allows for easily

recorded lectures with either a webcam or screen recorder and is assessable and viable in Canvas, Brightspace, Schoology, and Google.

Technology: Internet, Canvas

Media: The Course Shell, Screen-cast-matic video instructional, editing software that opens inside the Peer Review, the uploaded instructions for the essay.

Materials: No paper materials are needed. Everything will be conducted through the internet and Canvas. The main “material” needed will be some type of electronic device: computer, iPad, phone, etc. Students have to have a way to access Canvas, Course Shell, and the Assigned Peer Review.

Utilizing Technology, Media, and Materials

Step One: Assign the paper – Thematic Essay – 800-1000 words. Upload the instructions to the Canvas shell Module. Set the due date and the expectations for the Peer Review

Step Two: Assign the Peer Review by setting it to automatically choose one student per

Review. The system in Canvas will automatically assign the Peer Review to each student

and send the link to the student on the assigned due date.

Step Three: Upload a screen-cast-matic video with complete instructions guiding the student through how to access the Peer Review; how to comment and make suggestions on the actual document, and how to submit the finished assignment. The video should also include an overview of the Peer Review Rubric, a document explaining the proper way to give feedback, and the submission guidelines.

Step Four: Insert a Discussion Board Post within Canvas having the students to give feedback on their experience. Was it difficult to understand? Did the feedback from other students help them with their assignment? Did they find the procedure easy to follow? Etc.

Requiring Learner Participation

Through the Discussion Board participation students will be asked to give their overall feedback concerning the assignment to help them gain insight and understanding into why Peer Review is important, how it will help them utilize their critical thinking skills, and help them strengthen their own writing skills. This will enhance the learner's ability to not only assess another

students' paper but to assess their own abilities of critical thinking, active learning, and use of technology.

1. Did students find the course material and instructions on Canvas easy to follow, and did the student fully understand the task?
2. Did students have trouble accessing the Peer Review assigned to them within their course shell online?
3. Was the editing software easy to locate, operate, and apply to the document once the Peer Review link was sent to the student. If the software was unavailable, were students able to locate and use the alternative means provided in Canvas by downloading the other person's document and making comments using Microsoft Word before resubmitting it to the link?
4. Were students able to clarify ideas and explain their thoughts and comments to classmates during the review in a clear and precise manner? Did they learn how to formulate and communicate constructive feedback on a peer's work?
5. Did the student grasp the core concepts and gain insight and understanding into their own writing and editing skills?

Evaluating and Revising

Because I have taught this lesson numerous times, I have gained insight into what works for me and what does not. Teaching students the importance of Peer Review is an essential component to the construction of their writing skills and their critical thinking. Peer Review helps students to identify strengths and weaknesses in their own writing. I am able to assess the students' knowledge and skill concerning their access of technology, the grasp of the material, their feedback and critical analysis of a peers' work, and their ability to follow instructions completely.

In the beginning, it was trial and error. I assigned reviews without adding the extra videos and walkthroughs to explain the process. It was about a 60% return on the work assigned. Students found it difficult to find the link to the Peer Review. If they happened to access the link, they often couldn't find the mode to review the assignment or turn it back in. Most all of the issues around the Peer Review were technical and concerned the overall technology of Canvas and the structure of the modules. I remedied the problem by creating Screencast-o-Matic videos. I have found that interactive videos increase a students' learning capacity outside the classroom.

This particular type of video informs, educates, and engages students. After adding Screen-cast-O-Matic videos with precise and clear instructions walking the student through from the beginning to end, by being able to capture and record my actual screen. This process allows me to go through the process step-by-step and guide the students on the pathway where I want them to go. I gained a 95 % return on assignments. Students gained more insight by having the process explained so clearly. Their understanding and work showed great improvement. As I revise the lesson for future purposes, I plan to add more group collaboration on Canvas for Peer Reviews

Conclusion

Through the different methods of learning, standards, and objectives, students are gaining more insight into assignments, technology, and media. By applying the ISTE student standards and the Technology Integration Matrix, learning is enhanced through key concepts in education. Employing different methods in classroom lessons and structure allows teachers to gain knowledge, assess students' capabilities inside and outside the classroom, and evaluate technology in an instructional setting.

Through Problem-Based Learning, Game-Based Learning, engaging standards in the classroom, and enhancing the five interdependent characteristics associated with the learning environment one can “integrate the use of appropriate instructional strategies, technology,

and media for learning [causing] teachers [to] successfully develop instructional strategies with...resources in their lessons to support learner differences and special needs” (Daesang et al., 2016).

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