Technology Decision Making for Digital Learning Environments

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Questions -

- Are you tired of seeing money wasted on technology that is ineffective, inefficient or that does not help meet the goals of instruction?

- Can you give an example?
Overview

• Background – Horry County Schools
• Technology Decision-Making
• Focus-Group Process
• Technology-Rich Instruction and Technological Functionalities
• Reflections and Lessons Learned
• Closure
Background

• The SC Accountability Standards and the Federal Letter Grade Model provide a specific benchmarks for what students are expected to learn.

• ACT Work Keys Test and Aspire College Readiness Test:
  ▫ Grades 3-8 and HS - Summative, Interim, and Classroom

• Technology proficiency is a key expectation that is embedded throughout the content standards (Center for Digital Education, 2013, ISTE Standards).

• Digital learning requires taking a more structured approach to integrating technology and a dedication to instruction that is based upon higher-order critical thinking
International Society for Technology in Education Standards (ISTE)

• **For students** - The standards for evaluating the skills and knowledge students need to learn effectively and live productively in an increasingly global and digital world

• **For teachers** - The standards for evaluating the skills and knowledge educators need to teach, work and learn in an increasingly connected global and digital society
ISTE Standards - Benefits

• Improving higher-order thinking skills, such as problem solving, critical thinking and creativity
• Preparing students for their future in a competitive global job market
• Designing student-centered, project-based and online learning environments
• Guiding systemic change in our schools to create digital places of learning
• Inspiring digital age professional models for working, collaborating and decision making
Technology Decision-Making for Digital Learning Environments

- Historically, schools utilize a variety of methods and reasons to purchase and to adopt personal technology devices for teachers and students.

- Often, decisions on technology devices could be categorized as a technology-driven perspective (what’s the neatest new gadget?).

- This is a perspective in which new or different technologies are adopted for use based on their potential use or the novelty of a product.

- A common practice in many organizations, this process is sometimes loosely referred to as a “buy the latest gadget” and then figure out how to use it in classrooms approach to technology decision-making.
Technology Decision-Making for Digital Learning Environments

• Many schools are beginning to move towards an instructional model referred to as a Personalized Digital Learning (PDL) model in order to effectively and efficiently integrate technology.

• The PDL model integrates technology in three ways;
  ▫ technology used by the teacher during the presentation of teacher-led materials,
  ▫ technology used by students during computer-based instruction,
  ▫ and technology used by students to communicate and create as they work together during project-based learning activities.
Technology Decision-Making for Digital Learning Environments

- The recognition of the profound use of technology in the three phases of this model required a more formal and scholarly approach to understanding how to make decisions concerning technology planning and management for the devices needed in these PDL instructional settings.

- Based on these issues, school leaders will want technology decision-making to be driven by teaching and learning, not “latest and greatest” technologies, and that technology form would follow function.

- In order to do this, input is needed from teachers and students to better understand how to make technology decisions for PDL classrooms.
Technology Decision-Making for Digital Learning Environments

• Technology integration through PDL - how can this be accomplished?
• What type of framework is a good fit of guiding this process?
Focus-Group Process

Start with a guiding framework

- School leaders came to the conclusion that Bloom’s Taxonomy was an appropriate framework to begin to classify instructional tasks along Bloom’s continuum of critical thinking from **Remembering** to **Creating**, then outline the technology functionalities would be needed to complete these tasks.

- These functionalities would combine to create a profile that would inform technology decision-making, including purchasing, implementation and training.

- The intent was to first understand *the tasks of students and teachers in classrooms focused on critical thinking*, and then find the best technology that would *meet these needs* (as opposed to buying technology, then finding out how to make it useful in a classroom).
Focus-Group Process

*Move forward with a focus group*

- Via a focus-group session, stakeholders (teachers, students and parents) can receive information on the PDL concept and give feedback about what they would like to do with technology in their classrooms.

- This focus group session will help school leaders to understand:
  - what teachers and students want to do with technology in their classes
  - where on the critical-thinking continuum these activities fall
  - what specific technological functionalities are needed to accomplish these tasks.
Focus-Group Process

The focus group planning session was guided by the following two questions:

- What does a teacher need to be able to do in a classroom using technology and digital content to promote student critical thinking?
- What does a student need to be able to do in a classroom using technology and digital content to develop critical thinking?
Focus-Group Process

• The discussions were led by the external facilitators and special emphasis was given to not discuss specific brands, models or companies, as they wanted to focus on technology functionality alone.

• There was a strong desire to avoid the broad generalizations such as “just buy us all 30 _____ brand tablets/laptops” because that was too far away from specific discussions about instructional tasks and student learning.
Technology-Rich Instruction and Technological Functionalities

- Bloom’s taxonomy was used to help guide the process of answering these questions to allow respondents to talk about what they are doing (or want to do) in a classroom, and then use that description to place it in the appropriate category of critical thinking.

- Next, the needed technological functionalities were described and discussed.

- By the end of the session, school leaders had a reasonable basis for understanding the technological functionalities that computing devices must have to be useful and to meet the needs of technology-rich PDL classrooms.
Technology-Rich Instruction and Technological Functionalities

*End with a answers*

- Table 1 shows the basic format for using Bloom’s taxonomy to categorize or classify teacher and student tasks and for describing the technological functionalities needed to accomplish these tasks.
<table>
<thead>
<tr>
<th>Level of Critical Thinking</th>
<th>Student &amp; Teacher Work</th>
<th>Technological Functionalities Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Highest Level)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creating</td>
<td></td>
<td></td>
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<tr>
<td>Evaluating</td>
<td></td>
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<td>Analyzing</td>
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<tr>
<td>Applying</td>
<td></td>
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<tr>
<td>Understanding</td>
<td></td>
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<tr>
<td>(Lowest Level)</td>
<td></td>
<td></td>
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<tr>
<td>Remembering</td>
<td></td>
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</tbody>
</table>
Technology-Rich Instruction and Technological Functionalities

*End with a answers*

- Table 2 shows the use of the chart in Figure 1 with some of the data collected in the focus group session. Table 2 shows examples of technology and student work discussed, how they were classified in *lower levels* of Bloom’s Taxonomy, and the technical functionalities needed to accomplish these tasks in a classroom.
<table>
<thead>
<tr>
<th>Level of Critical Thinking</th>
<th>Student &amp; Teacher Work</th>
<th>Technological Functionalities Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Applying</strong></td>
<td>Access to e-textbooks for assignments and readings&lt;br&gt;Access to formal and informal digital curriculum content for assignments and readings&lt;br&gt;Digital office applications (documents, spreadsheets, etc.)</td>
<td>Productivity software&lt;br&gt;Digital curriculum content access&lt;br&gt;Access &amp; downloading of e-texts&lt;br&gt;Mobile devices with web accessibility</td>
</tr>
<tr>
<td><strong>Understanding</strong></td>
<td>Adaptive digital content tutoring</td>
<td>Smart tutoring software aligned with standards&lt;br&gt;System tracking of student progress</td>
</tr>
<tr>
<td><strong>Remembering</strong></td>
<td>Self-directed student instruction and recitation via educational games</td>
<td>Access to applications and various gaming software</td>
</tr>
<tr>
<td>(Lowest Level)</td>
<td></td>
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</tbody>
</table>
Higher Levels of Critical Thinking

Table 3 provides examples of technology-rich and student work discussed, how they were classified relative to Bloom’s higher levels of critical thinking, and the technical functionalities needed to accomplish these tasks in a classroom.
<table>
<thead>
<tr>
<th>Level of Critical Thinking</th>
<th>Student &amp; Teacher Work</th>
<th>Technological Functionalities Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Highest Level</strong></td>
<td></td>
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<tr>
<td><em>Creating</em></td>
<td>Digital audio and video projects (movies, podcasts)</td>
<td>Social media applications &amp; access</td>
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<tr>
<td></td>
<td>E-publications (blogs, newsletters, announcements) - E-portfolios</td>
<td>Web accessibility, Design software</td>
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<tr>
<td></td>
<td>Student &amp; teacher designed tutorials</td>
<td>Mobility for field capturing of authentic audio and video</td>
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<td></td>
<td>Student-to-student and student-to-teacher editing, sharing and collaboration</td>
<td>Audio/video &amp; screen capture editing capabilities</td>
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<td></td>
<td></td>
<td>Access to closed collaborative online workspaces</td>
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<tr>
<td><em>Evaluating</em></td>
<td>Synchronous online discussions</td>
<td>Social media applications &amp; access</td>
</tr>
<tr>
<td></td>
<td>Synchronous online conferencing</td>
<td>Two-way audio and video communication</td>
</tr>
<tr>
<td></td>
<td>Student-to-student and student-to-teacher messaging and editing</td>
<td>Access to closed/non-public online workspaces</td>
</tr>
<tr>
<td><em>Analyzing</em></td>
<td>Access to reliable and recent data</td>
<td>Web accessibility</td>
</tr>
<tr>
<td></td>
<td>Collaborative online workspaces</td>
<td>Access to closed collaborative online workspaces</td>
</tr>
</tbody>
</table>
Technology-Rich Instruction and Technological Functionalities

*End with a answers*

- Based on the intended teacher and student work and the technological functionalities needed, now technologies can be review and purchased which *meet the needs of the stakeholders and assist in achieving the goals of instruction.*
Reflections and Lessons Learned

- This focus group session provided a significant amount of insight into what students and teachers want to do with computing devices and technology in their classrooms. This was specific insight into what newly purchased technologies need to be able to do. These functionalities were analyzed for common and reoccurring themes which included the following:
  - Mobility for use in multiple settings
  - Internet connectivity with access to social media networking
  - Collaboration functionalities
  - Productivity software
  - Video and audio capture and editing capabilities
  - Compatibility and access to educational software and applications
  - E-content accessibility
Reflections and Lessons Learned

• The leadership team’s next step was to choose the devices, software and applications that would meet these needs and then determine how to use their budgets most effectively and wisely to put effective and useful technologies in the hands of teachers and students.

• This type of focus session helped to align technology decision-making with student and teacher needs as they work to create new learning environments and improve achievement and meet standards.
SC Teacher Education Journal 2013 and 2014

• Using Bloom’s Taxonomy to Help Guide Technology Decision-Making in Schools

• Lessons Learned: Implementing a Personalized Digital Learning Initiative in SC Public Schools
Closure

- Both school districts and teacher education programs can benefit from using critical-thinking to frame and better understand technology use, planning and management.

- For most school districts, using Bloom’s Taxonomy as a guide can help them avoid the common practice of buying “the next great thing” in technology just to find that it doesn’t help students or teachers accomplish their goals.
Closure

• If what is purchased for students and teachers prevents these tasks from being accomplished, then they have not achieved alignment between the technology being used and the goals of the instruction.

• Teacher education programs can use the example in this paper to teach candidates how theory can inform practice and how they can apply sound principles to respond to critical issues such as effective technology integration and the transition to CCSS.
Questions
References


