ASKING USEFUL QUESTIONS:

GOALS, ENGAGEMENT, AND DIFFERENTIATION IN TECHNOLOGY-ENHANCED LANGUAGE LEARNING

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In his popular 1997 article, Steve Ehrmann encouraged us to ask useful questions about technology for education (Ehrmann, 1997). In the years since Ehrmann asked his questions, increased pressures from legislative bodies, educational stakeholders, and business have driven an ever-increasing influx of technology into schools; however, this is not necessarily the evil that it has been portrayed as in various media. Within classrooms the availability of technology is offering us as language teachers the opportunity to usefully question what we do and why. Although technology itself is incapable of action or thought, its presence in our classrooms and schools is helping to facilitate questions about the goals of language classrooms, conceptions of teaching and learning, and our ability to address student needs. If we ask good questions and apply the answers to use technology in effective ways, resultant changes in our thinking and our pedagogy can lead to greater student achievement

This paper first asks questions about and discusses language classroom goals. It then reflects on two related, essential strategies for language teaching and learning that can help us meet these goals: engagement and differentiation. Finally, the paper provides examples of how technology can be used to engage and differentiate for our learners and support goal-centered learning.

Goals and Guides for Technology-Enhanced Language Learning

Before we decide whether and how we should use the technology present in our classrooms, we need to be guided by both instructional and learning goals and what we know about student learning. We should first ask:

> ***What are our goals for our students (instructional goals)?***

Goals of Language Instruction

***Instructional* goals are often based on a curriculum or standards handed down to schools and teachers. They are the formal foundation for what is taught in many language classrooms around the world. Many instructional goals focus on discrete aspects of**

language acquisition, with a formal test as the measurement of how well students have met the goals.

On the other hand, most teachers would probably say that the goal of language instruction is language learning. Many teachers use their knowledge of learners and language to evaluate informally how students have met the goal to learn language. In addition, some teachers would add that content learning is an important goal in language classrooms.

Regardless of curriculum content or other instructional requirements, however, most teachers share these personal instructional goals:

- **Provide a learning environment that will maximize the potential for student success**
- **Teach effectively and efficiently**
- **Use tools such as technology to support goals.**

Some discussions of classroom goals may stop here, but we must also ask:

What are our students' goals (learning goals)?

Language Learning Goals

In order to help students to reach their full potential, teachers must also consider l*earning* goals - the personal goals that students have for language study. Within any classroom, students will have a variety of reasons for learning an additional language (and a variety of backgrounds, abilities, and motivations that they bring to the task). These reasons can range from simply desiring to read a text in its original language to passing a professional test in the foreign language. Once in the classroom, learners may also be motivated by factors such as a desire to please the teacher, to get a good grade, or to impress a peer. Teachers should understand these goals because they can have an impact on student performance in myriad ways. Likewise, to insure that our teaching matches what our students really need, we should ask:

What real-world goals should our learners meet?

Skills for the Future

In addition to instructional and learning goals, as we develop instruction we must take into account what else our language students need to be able to do with and through language.

Throughout the education literature, researchers and philosophers are emphasizing the need for all learners to master what they call "21st century skills" (Egbert, 2005; Learning Point Associates, 2003). These include:

- ***Knowledge acquisition*** **(e.g., organizing, recording, understanding);**
- ***Problem-solving*** **(e.g., defining, selecting, evaluating);**
- ***Critical thinking*** **(e.g., drawing inferences, synthesizing, integrating, distinguishing);**
- ***Production*** **(e.g., creating, developing, transferring);**
- *Inquiry* (e.g., asking questions, translating, developing research skills);
- ***Communication*** **(e.g., communicating, participating);**
- ***Creative thinking*** **(e.g., thinking differently, applying).**

These skills are central to another goal for learners in the technology-filled lives they may face: *media, technological, and information literacies*. These literacies include the ability to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (American Library Association, 1998, n.p.) and being able to choose, interact with, and produce technology-based media. Scholars contend that, without these 21st century skills, our learners will not be prepared for their futures outside of our classrooms.

Pedagogical Guides

Meeting all of these formal and informal goals can be an enormous and sometimes overwhelming task for teachers. To help us understand how to achieve instructional goals, student learning goals, and real-life goals, we must keep in mind pedagogical guides such as research and practice in brain-compatible learning (Dhority & Jensen, 1998; Erlauer, 2003; Lombardi, 2004), learning styles (Rao, 2001; Chamot 2005; Chao, forthcoming), second language acquisition and learning (Ellis, 1997; Johnson, 2004; Spolsky, 1986), and general standards from TESOL (www.tesol.org) and ISTE (www.iste.org). Across these guides, *engaging* students in their learning rises up as one of the more salient strategies to reach instructional goals. To help engage students in their learning, teachers can d*ifferentiate instruction*, which requires teachers to recognize that learners have "varying background knowledge, readiness, language, preferences in learning, interests" and to provide "multiple options for taking in information and making sense of ideas" (Hall, 2002, n.p.).Well-designed technology use can help us to engage our students and to differentiate instruction, assisting us in helping students to meet all goals effectively, efficiently, and to the best of their ability.

Engagement

Based on the discussion above, a question for us to answer is:

How can we engage students in learning English?

Engagement is often defined as absorption in an activity and implies motivation to do the activity. Engagement includes student *involvement* and *ownership*. Meltzer and Hamman (2004) refer to engagement as "persistence in and absorption with reading, writing, speaking, listening, and thinking even when there are other choices available" (p.10). An engaging task means that students spend more time on task and have deeper focus, leading to greater success. In order to engage students, teachers should understand their needs, wants, and interests as relevant to their language learning; in other words, to comprehend their learning goals. Even in classrooms that have a strict standardized and ordered curriculum, the teacher has opportunities to make sure that student learning goals are met. Understanding student learning goals is often as simple as asking students why they want to learn an additional language and observing them as they do so.

According to McKenzie (1998), our students can be considered "engaged" when they are:

- Participating in authentic and multi-disciplinary tasks;
- Participating in interactive learning;
- Working collaboratively;
- Learning through exploration;
- Responsible for their learning;
- Strategic (i.e., they use learning strategies).

The literature describes many different factors in engagement, ranging from cognitive to socio-affective. While it would be difficult for teachers to measure and keep track of all of them, four classroom task elements that impact engagement are under the teacher's direct control:

task content, task participants/ grouping, task process, and tools.

Meltzer and Hamman (2003) teased out three strategies that are supported throughout the engagement literature for engaging students within these task elements:

1. ***Making connections to students'*** **lives by creating opportunities for authentic interactions with people, objects, and experiences that initiate student interest. In other words, tasks should be authentic and relevant for learners.**

2. *Having students interact* with each other and with language. Tasks should be cooperative and/ or collaborative in both focusing on language and using language for authentic purposes.

3. *Creating responsive classrooms*, or considering students' needs, wants, abilities, and interests. In other words, tasks should be differentiated, challenging, and scaffolded.

To find out what might engage students and how to make connection to their lives, teachers can start by asking students to respond to questions such as:

What do you talk about with your parents/colleagues/friends?

What do you need to do outside of school?

What is your best/most interesting subject? Why?

What do you want your future to be like?

How do you like to have fun?

The sample lesson below demonstrates some general strategies for making a traditional lesson on family in a textbook more engaging.

Lesson on Families

Content Objectives: At the end of this lesson, students will be able to

* Explain a variety of family structures

Language Objectives: At the end of this lesson, students will be able to

* Use family vocabulary correctly in context
* Express their opinion using "I think…"
* Participate in informal discussion appropriately
* Create questions for interviews

Preview: With the class, develop an *essential question* to guide the lesson. To do so, ask students what they want to know about families or what might be interesting to find out (*responsiveness*). Students might come up with questions such as "What's the best kind of family?" or "What different kinds of families are there around the world?".

Present: Have students complete the readings and exercises in the text as needed to acquire vocabulary and structures (*responsiveness*). Then, scaffold students as they make interview questions to ask to family members, friends, schoolmates, or other people in their lives about the essential question (*connection)*. Allow students to work together if appropriate (*responsiveness*). When students are ready, have them interview the participants of their choice (*interaction*) and record the responses in whatever mode is most comprehensible for them (*responsiveness*). Have students discuss their findings with their classmates and research any other questions that come up (*interaction*/*responsiveness*). Encourage and model the language objectives.

Review: Review with students what was learned during the lesson and ask them to write or say their opinion in answer to the essential question. Evaluate student question formation, interview process, and participation.

Student answers to questions about engagement can also assist teachers in differentiating instruction, described next.

Differentiation

Because differentiation is an important part of engaging students, we must ask:

How can we meet the needs of all learners in our English classes?

Each student is a unique individual and has different learning needs. Differentiating instruction means that students work at their level in ways that they can be successful and demonstrate that success. The central concept is that all students must reach the *same* goal; however, *how* they reach it can differ (Theroux, 2004; Tomlinson, 1999). In order to differentiate, teachers must assess their students' interests and abilities and design instruction around them. To start, teachers can ask their students to answer these questions:

Who do you like to work with?

What do you like to think about?

What's the best way for you to show what you know?

How do you like to work in class? In groups? Alone?

What's your favorite classroom activity?

What are some things you are good at?

What are some things you need practice in?

Most important in differentiating is to provide learners with options so they can meet instructional and learning goals in ways that are most engaging to them. For example, teachers can provide choices within these elements of instruction:

- **Content/Materials (e.g., using a variety of materials with the same content but different degrees of difficulty).**
- **Tools (e.g., from pencil or crayons to a word processor)**
- **Processes (e.g., teacher-led, cooperative, collaborative, individual, or group work)**
- **Products (e.g., posters, presentations, summaries, essays, Web pages)**
- **Assessment/Evaluation (e.g., tests, rubrics, performances)**

Lamb (2003) provides examples of resources for students with a variety of learning needs.

It is not necessary for teachers to differentiate all task elements, but it is important to do so for those that have the greatest impact on student access to learning and their performance before, during, and after the task. Teachers can employ these strategies in tasks that do not use technology, but technology use can make engaging and differentiating easier and more effective.

Technology Use

Thus, finally we must ask

How can technology help us to meet goals, engage learners, and differentiate?

Technology can support us in doing the things we already do, or it can help us to envision and meet new goals for language learners. Egbert (forthcoming) notes that the first step to understanding technology use is to understand in general what technology can and cannot do, as presented in Table 1 below.

What can't technology do?	**What can technology do?**
* Design a seating chart taking into consideration understandings about learners and their attitudes	* Manipulate streams of meaningless data. * Repeat itself endlessly. * Help make

toward each other. * Make friends or show respect. * Create lessons that address the needs of diverse students. * Decorate a classroom. * Choose a textbook. * Manage 20 third-graders or 60 adults. * Make a decision based on a gut feeling. * Give creative feedback. * Understand. * Search for or create knowledge. * Teach.	learning more efficient by controlling large amounts of data quickly. * Help make learning more effective by providing a great wealth of resources and allowing students choices. * Operate in environments where humans cannot. * Connect people who could not connect cheaply or easily otherwise. * Provide means to improve students' acquisition of basic skills and content knowledge (Kleiman, 2001). * Motivate students (Kleiman, 2001). * Work quickly and objectively. * Strengthen teachers' preferred instructional approaches – for example, those who lecture can use computer-enhanced visual support, those who prefer inquiry-based approaches can use raw data on the Web and databases or spreadsheets for

	analysis. * Help to change the vision of a classroom as a room with four walls that depends solely on the teacher for information.

Table 1. What Technology Can and Can't Do (Egbert, forthcoming)

Technology in the form of computers can help language teachers in many other specific ways, including:

· Providing language and content resources on a variety of levels for a great number of interests.

· Presenting real-life problems and raw data from which learners must discover a solution.

· Providing interaction/ opportunities for communication with native and/ or more proficient speakers and with experts on specific topics.

· Supporting multimedia/mulitmodal input so that all students have access to information and a variety of ways to produce language and content.

· Giving learners more time to learn and practice and more feedback from a variety of audiences.

· Giving students reasons to listen to and read authentic language.

· Encouraging learners to be active participants in their learning.

· Supporting meaningful language use.

· Providing endless practice.

Technology can be intergrated into almost any task to differentiate and engage students in multi-level language classrooms. In the sample lesson outlined below, technology helps differentiate in several of the elements of instruction mentioned previously.

Lesson plan on Body Systems

Essential Question: What is the most important system in the body?

Content Objectives: Upon completion of this lesson, students will be able to:

- Label the main body systems correctly
- Explain the relationships among the body systems
- Describe the most important and least important systems in the body

Language Objectives: Upon completion of this lesson, students will be able to:

- Spell and pronounce the major systems in the body correctly
- Write and/or explain using complete sentences in present tense
- Use comparatives and superlatives in argument
- Use "because" correctly
- Summarize readings and discussion

Preview: Ask students the essential question and project answers for class view. Explain, using words, pictures, and realia, the focus of the lesson – students will be deciding which system in their bodies they could do without and which is the most essential. Explain the lesson objectives and demonstrate the lesson procedure. Ask students to repeat the procedure as it's written down to make sure that they understand. With the class develop a rubric that covers the lesson objectives, projecting the work-in-progress from the word processor onto a screen so that all students can see and hear.

Present:

Day 1

1. Readings. Group 1 (lower proficiency readers and visual/ kinesthetic learners) starts with *The Body* (http://www.bbc.co.uk/science/humanbody/), Group 2 (intermediate readers) should start with *Human Body Adventure* (http://vilenski.org/science/humanbody/hb_html/skin.html), and more advanced readers start with entries from *Wikipedia* (http://en.wikipedia.org/wiki/Human_anatomy) and find additional resources (*materials differentiation*). As the more independent readers work

with their groups, the teacher can work with the less proficient group (*process differentiation*).

2. Groups refer to the readings to mark a life-sized outline of a body with labels and graphics of the main body systems. Students who need more visual support can use different colored crayons or markers.

3. Each student in each group chooses one of the systems to investigate more deeply using electronic and text-based resources.

Day 2

4. Using additional resources of their choice, students summarize simple facts about their chosen body system. Students can write their information on the body chart, make note cards, fill in a teacher-created worksheet, dictate to another student, or create a graphic organizer to organize their information (*product differentiation*).

5. While students are conducting their research, the teacher presents grammar mini-lessons on comparatives and superlatives, writing complete sentences, and the use of "because" to students who need them (*content differentiation*).

6. Students discuss all of the body systems with their groups, taking notes on a graphic organizer, worksheet, or note cards for the systems that their group mates investigated. Students discuss which systems they believe are the most/least important, practicing using the grammar in the language objectives.

Day 3

7. Groups reform, with each student joining a new group that has chosen the same "most essential" body system.

8. Students pool their information and develop their argument for why the system they chose is the most important. Using the lesson rubric as a guide, they prepare a poster, electronic presentation, roleplay, or other appropriate format to present their argument (*product differentiation*).

Day 4

9. Groups present their arguments. As they listen, members of the audience summarize each position in one sentence or more using the word "because" and complete sentences. The class votes on the most important body system.

Review:

The teacher leads a closing discussion focusing both on the products and the process used during the lesson. Products and summaries and evaluated according to the rubric/lesson objectives.

In the end, with the differentiated materials, process, and products, all learners will have the chance to acquire the same concepts and central vocabulary that are the main objectives of the lesson.

With video cameras, cell phones, Web cams, scanners, copiers, MP3 players and other technologies, teachers have even more opportunities to engage and differentiate while working toward instructional and learning goals. However, even teachers with very limited technology can take advantage of the opportunities it affords. For example, with one computer teachers can use inexpensive puzzle-making software to make a vocabulary puzzle at different levels, allow access to drill and practice software for students who would benefit from it, or use multimedia/ multimodal collaborative software such as *International Inspirer* from Tom Snyder Productions that is made for the one-computer classroom. Following are two additional examples of the plethora of technology uses that support goal-centered learning.

Example – Reading about UFOs

An example that contrasts traditional, teacher-led instruction with more goal-centered (engaging, differentiated, with a focus on 21st century skills) instruction might help to clarify the issues presented above.

Traditional Instruction

A standard process in many reading classrooms goes something like this: The teacher introduces the mandated reading for the day, for example, the reading on UFOs in Zwier and Stafford-Yilmaz (2004). Students go over the vocabulary and prereading questions as the teacher leads the class. The students then read and translate the text and use the dictionary to figure out words that they don't know. Students answer comprehension and discussion questions and practice the grammar from the passage. Only the teacher will see the results. The teacher gives a quiz on the vocabulary and content that students have memorized.

Because the interaction in the class involves only one student answering at a time, the opportunity for deep engagement with the text and with language is missed. Some students will learn what they need to know this way, others will memorize and forget, still others will gain very little from this one-size-fits-all approach.

Goal-centered Instruction

Students who learn well by spending time on comprehension and discussion questions and uncontextualized grammar practice should certainly do so. However, to make this reading topic more engaging, differentiate instruction on UFOs, and use technology effectively to reach goals such as critical thinking, communicating, and problem-solving, students can interact with authentic language, skills, and audiences by participating in Miller's (2005) *That's a Possibility: UFOs* WebQuest.

The Introduction to this Web-based project engages learners by informing them that during the project they will interact with authentic language and content while working both independently and collaboratively and using 21st century skills. Miller writes:

> Picture this: you and a team of learners are presented with the task of organizing a debate about whether UFOs exist or not. But instead of looking for a group of outside experts, you are each going to become an expert. Each of you will develop a different point of view.
>
> Based upon what each of you learned, you will organize a class debate. What's the truth? That will be for you to discover.
>
> But be careful because when we use the Internet for our research because many people post their personal opinions or only know a little bit of the whole story. In the following WebQuest, you will use the power of teamwork and the abundant resources on the Internet to learn all about UFOs. Each person on your team will learn one piece of the puzzle and then you will come together to get a better understanding of the topic.

Miller differentiates throughout the project by providing choices for students in each step of the project, asking learners to choose from a variety of resources and roles and to challenge themselves:

> Because these are real Web pages we're tapping into, not things made just for schools, the reading level might challenge you.

Miller focuses on student needs by asking teammates to establish background information together before doing independent work, thus providing scaffolding and interaction. She also expects students to "Be creative in exploring the information so that you answer these questions as fully and insightfully as you can." She provides "real world feedback" by asking students to write a letter to members of an online UFO group. The letter compiles and summarizes the group's understandings and provides evidence from their inquiry.

This WebQuest is not certain to engage every student in the class, but because it requires active participation, provides authentic, relevant resources, allows for collaboration, is challenging but scaffolded, supports 21st century skills such as critical thinking and production, and provides choices to meet the needs of different students, there is more opportunity for students to be engaged. There is also, then, a greater chance that both instructional and learning goals will be met successfully. The role of technology is not incidental in this project; without the technology to provide resources, language support, and a communication forum, this activity could not nearly as efficiently employ strategies for engagement and differentiation.

Example: *Thinking Reader Software* (Tom Snyder Productions)

Reading in an additional language is not an easy task to begin with; employing one level of a standard text for students of various levels of reading ability can often dissuade students completely from becoming engaged in reading. Software packages such as *Thinking Reader* offer a solution to this problem, providing a set of readings that can engage diverse learners, strategy support that can be differentiated for each learner, and an amazing array of tools to give learners access to the reading. For example, learners can choose to hear any portion of the text, highlight portions of the text that are being read, and click on vocabulary links to see a multimedia glossary. The teacher can select the level of support/difficulty for each student or give students options to address reading strategies. Built in teacher tools include progress reports for each student and for the class and a student log to which teachers can respond. Figure 1 shows the *Thinking Reader* student screen for a part of the book Tuck Everlasting. At the top are volume, highlighting, and text size options and controls for human-voice reading. Other student helps are located on the left of the screen.

Figure 1. Student screen from Thinking Reader.

Software packages such as *Thinking Reader* and other technology-enhanced tasks that give students choices have a better chance of engaging a variety of learners than instruction without options. It therefore also provides us the opportunity to meet language learning goals of all kinds.

Conclusion

Ehrmann (1997) concludes: "Ordinarily what matters most is not the technology per se but how it is used; not so much what happens in the moments when the student is using the technology, but more how those uses promote larger improvements in the fabric of the student's education…" (n.p.).Asking questions to ourselves about our instruction and asking learners questions to help us assess and understand them on multiple levels can lead to more effective instruction and greater student engagement. Engaged learners achieve more because they try harder and spend more time on task. Even standardized curricula can be engaging and differentiated and can use technology to support instructional and learning goals. Surely, it can take more time to be an effective teacher who considers all of these strategies and ideas. But with engaging tasks and differentiated instruction supported by technology, *learning* can take *less* time.

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