Describe key characteristics of digital learners.

Draw out implications for curriculum and instruction in Catholic schools.

What differences have you observed in how your students learn now compared to 10 years ago?
Our students’ brains are different.

Old Brain Science Beliefs

• Born “hard-wired” @ birth, stable by age of 3 with fixed number of brain cells.

• Fixed memory, Fixed processing power, Fixed intelligence

Brain is plastic throughout our lives based on...

• experiences we have

• intensity and duration of inputs

By age 21, this digital generation will have:

- played more than 10,000 hours of video games
- sent and received 250,000 emails and text messages
- spent 10,000 hours on the phone
- watched more than 20,000 hours of TV
- seen more than 500,000 commercials

Digital bombardment has a particularly strong effect on the visual cortex.

• Eye processes images 60,000 times faster than words

• Nerve cells in brain devoted to visual processing = 30% of cortex

• 8% = touch

• 3% = hearing
University of Rochester Study

When information is presented orally, remember only 10% after 72 hours.

a.k.a. ---72 hours after lecture, retain 10% of content.

Add pictures with the content, students remember up to 65%

Remember content of over 2500 pictures with 90% accuracy several days later; 63% after one year.

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3M Study

• 100 photos to Digital Natives = 90% recall
• 100 photos to Digital Immigrants = 60%
• 100 photos to Digital Dinosaurs = 10%

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We are used to black text on white background

COLOR

This generation prefers

these combinations

Visual Kinesthetic
“The vast majority of students in any given classroom are no longer auditory learners or text-based learners. Because of the effects of digital bombardment, they think graphically and are therefore either visual or visual kinesthetic.”

21st Century Fluency Project

http://www.21stcenturyfluency.com/

Natives prefer...
1. to access information quickly from multimedia sources
   A.K.A
   Use internet
   Use cell phones
   Use lap tops

Immigrants prefer...
1. slow and controlled release of info from limited sources
   A.K.A
   Print handouts
   Power points
   White boards
   Ban digital devices

Natives prefer...
2. parallel processing and multitasking
   A.K.A
   Problem/task approached in multiple ways, using multiple tools, choices, different sequences

Immigrants prefer...
2. linear processing and single or limited multitasking
   A.K.A
   One topic at a time, step by step sequence, whole class response, teacher-directed Q & A

Natives prefer...
3. processing pictures, sounds, color, and video before text
   A.K.A
   MORE visuals
   Multimedia at the start of learning, Images and video carry the message

Immigrants prefer...
3. to provide text before picture, sound, video
   A.K.A
   Read first
   Anchor work in text

Natives prefer...
4. random access to hyper-linked multimedia information
   A.K.A
   Problems first, finding links, “clicking around” on handhelds, web-spiration

Immigrants prefer...
4. to provide info linearly, logically, sequentially
   A.K.A
   Paper-bound, single path of thought, processing text from beginning to end
Natives prefer...
5. to network simultaneously with others
A.K.A. Work together, create together, re-mix, edit and add on

Immigrants prefer...
5. students to work independently before they interact and network
A.K.A. Individual student work more highly valued

Natives prefer...
6. to learn “just in time”
A.K.A. Problem/task -- what do we need to know to do this

Immigrants prefer...
6. to teach “just in case”
A.K.A. Fixed bodies of content, defined subject matter and skills, this content for all in this time

Natives prefer...
7. instant gratification and immediate rewards
A.K.A. Active, engaged doing, make decisions often and get good, quick feedback on what they did

Immigrants prefer...
7. deferred gratification and delayed rewards
A.K.A. Teacher-directed, paced and structured input, Q & A individual response

Natives prefer...
8. learning that’s relevant, active, instantly useful, and fun
A.K.A. Problem-driven, real-life connected, using digital tools

Immigrants prefer...
8. feel compelled to teach memorization of content in the curriculum guide
A.K.A. Content driven

How could you add more
Choice
Visuals
Relevance
Problem-solving
Collaboration
Creativity
Feedback
Real-life
21st Century Skills (www.21stcenturyfluency.com)

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Teaching trends to embrace

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1. Build in more discovery.....

2. Give context to the content.....

3. Give fewer conclusions.....

4. Pose problems first, teach second.....

   problems lead to questions
   questions lead to ownership
   ownership leads to independent thinking
   independent thinking leads to a culture of autonomy

   The 21st Century Fluency Project
   www.21stcenturyfluency.com

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New or 21st century Skills

Traditional Skills of Increased Emphasis

Traditional Literacy Skills

Traditional Skills of Decreased Emphasis

Obsolete Skills
5. Build in a digital component.....

6. Keep moving from LOTS to HOTS.....

Knowledge
Comprehension
Application
Analysis
Evaluation
Synthesis
Evaluation & Synthesis

www.21stcenturyfluency.com

<10% Read Reading
Hearing Words
Verbal Receiving

10% Hear Hearing

20% See Viewing Pictures

30% Hear and See Watching a Movie
Looking at an exhibit
Watching demonstration
Seeing it done on location

40% Say Participating in a discussion
Giving a talk
Receiving & Participating

50% Say and Do Simulating the real experience
Doing the real thing
Teach it to another person

60% Doing

100% Active LOTS

100% Peer-based, self-directed and informal learning online

Youth aren’t waiting for traditional models of learning

Something that squares with my beliefs.

Three points to remember

A question still circling.

Ultimately, there are two kinds of schools: learning enriched schools and learning impoverished schools. I have yet to see a school where the learning curves...of the adults were steep upward and those of the students were not. Teachers and students go hand and hand as learners...or they don’t go at all.”

Roland Barth