Exploring Learner-Centered Assessment: A Cross-Disciplinary Approach

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Frustrated by students' disappointing performance on traditional exams, an education professor and a psychology professor independently asked their students to simply demonstrate what they had learned during a given time frame. In this article, we will argue that when students are provided opportunities for learner-centered assessment, they dedicate more time, show more creative output, and are often more successful than when answering questions on a traditional assessment measure. Research has demonstrated that students who create their own assessment must show that they understand the information by re-interpreting it in a different way, the very definition of deep learning (Atherton, 2005; Saljo, 1979). When instructors require that students really think about what and how they have learned, they are encouraging further learning to occur (Bransford, Brown, & Cocking, 2000). Sample methods of learner-centered assessment with rubrics are provided, as well as suggestions for implementation and improvement.

Rationale

During a break between sessions at the 2009 meeting of the International Society for Exploring Teaching and Learning, the authors – an education professor and a psychology professor – shared their personal experiences with assessments. Frustrated by students' disappointing performance on traditional, i.e., multiple-choice and short-answer exams, the authors independently asked students to simply demonstrate what they have learned during a given time frame. Even more surprisingly, the authors found they experienced many of the same advantages and frustrations, which was unexpected since they were from differing academic disciplines (psychology and education). Thus, this instructional article offers an opportunity to share these experiences with others in hopes of furthering discussion on learner-centered assessment.

Literature Review

For many years in education, the focus has been on content with experts, i.e., teachers, delivering the content to novices, i.e., learners. In contrast to this passive, teacher-centered approach, a constructivist approach, influenced by the theories of Vygotsky (1986) and Piaget (1977), relies on active exploration by students with professors providing guidance as needed. Through his initial research with snails, then later with children, Jean Piaget (1977) provided a basis for a theory of constructivism whereby knowledge is not something which is produced independently, but instead it adapts according to the organism's experiential world (Fosnot, 1996). Von Glasersfeld (1996) states, "Knowledge, then, could be treated not as a more or less accurate representation of external things, situations, and events, but rather as a mapping of actions and conceptual operations that had proven viable in the knowing of the subject's experience" (p.3).

Learners must pay attention to relevant information, organize the information into logical representation, and integrate these representations with existing knowledge (Mayer, 1999).

The constructivist approach also emphasizes the role of intrinsic motivation which involves engaging in a behavior that is satisfying in and of itself (Schmitt & Lahroodi, 2008). Underlying this approach is the belief that individuals learn best when they are intrinsically motivated to seek out new knowledge and skills (Norman & Spohrer, 1996) and that intrinsic motivation is key to creativity (Runco, 2004; Sternberg, 2000). Thus, because learners are at the center of the educational process, this approach is often referred to as learner-centered. Constructivist theorists contend that students do not have to have mastery of a subject, but instead they are "encouraged to explore it, handle it, relate it to their own experience, and challenge it whatever their level of expertise" (Weimer, 2002, p.13). Piaget along with Vygotsky and other semiotic interactionists held the idea that we as humans cannot have an objective view of reality because we continually transform and reconstruct it and ourselves (Fosnot, 1996).

However, while there has been a plethora of time and energy devoted to developing methods and techniques of learner-centered teaching, not as much attention has been focused on learner-centered assessment.

Traditional Assessment

Our society has come to expect an evaluation, grade, assessment, or numerical ranking to determine educational value and/or worth. Popham (2005) states:

Standardized tests have been used to evaluate America's schools since 1965, when the U.S. Elementary and Secondary Education Act became

law. That statute provided for the first major infusion of federal funds into local schools and required educators to produce test-based evidence that ESEA dollars were well spent. (para. 3)

In the field of education, there are local, state, and national standards which students must meet in order to progress through schooling and an inordinate amount of funds dedicated to maintaining these standardized assessments.

Many instructors still rely on standardized or traditional forms of assessment. Commonly used traditional tests are an appropriate method of measuring declarative knowledge or basic facts (Pellegrino, Chudowsky, & Glaser, 2001), but they may not be reasonable for the learner-centered style (Norman & Sphorer, 1996). Retention tests, often used, evaluate how much of the given material a student can remember. A retention test may take the form of recall or recognition (Mayer, 1999). A recall test asks students to record all the information they can recall from a given source, while a recognition test asks students to choose which of several possible answers is best. Both recall and recognition tests measure rote learning. Rote learning is defined as learners adding behaviors or information to their memories and is best supported by drill-and-practice instruction methods (Mayer, 1999).

Most recall and recognition assessments take the form of a multiple-choice test. Disadvantages to this method of assessment are plentiful. First, the learner may interpret the information on the test differently than was intended and, therefore, answer the question incorrectly. The wrong answer, then, would signify a different interpretation, not necessarily incorrect learning. Second, multiple-choice assessments offer an all-or-none approach for gauging a student's learning. Students do not receive credit for what they do know. Third, because students have different options to select, a test taker may receive credit for a correct guess. With all of these disadvantages, the problem with the assessment is the same: process is not being measured, only final outcome.

Finally, there is concern over a potential gender bias. Research has indicated that males perform better than females on multiple-choice exams (e.g., Bolger & Kellaghan, 1990; Murphy, 1982). Recent research on traditional assessments has identified several serious limitations with them (for a complete review, see Pellegrino et al., 2001). There are two weaknesses relevant to the classroom setting. First, these assessments may not effectively portray the kinds of sophisticated knowledge and skills deemed necessary for success in our complex society (Resnick & Resnick, 1992). They are not structured to identify key differences in students' levels of understanding (Pellegrino et al., 2001.) Second, traditional assessments do not show students' progression of knowledge over time; they depict understanding at *one* specific moment in time.

To create an alternative measure of assessment, educators moved to transfer tests. Transfer tests require that students apply the information they have learned in a novel way. Some researchers have argued that transfer tests are an accurate way of assessing constructivist learning or active learning (e.g. Mayer, 1999). However, in this article, we argue that true constructivist methods allow students to engage in their assessment process through product development; students must create their own assessment. Student-centered approaches promote a feeling of ownership among students (Pedersen & Liu, 2003). Shepard (2000) recommends the use of open-ended assessment techniques that are designed to involve students in their own learning process. If viewed as an instrument, assessment allows both professor and student to evaluate what the student knows and what the student can do with the new knowledge and skills (Gerdy, 2002).

Learner-Centered Assessment

Student-centered learning demands that students set their own objectives for learning and determine the resources and activities that will help them meet those objectives (Jonassen, 2000). This approach begins with a central question that creates a need for certain knowledge and activities, and learning is the result of students' attempts to respond to that question (Jonassen, 1999). Through learner-centered teaching, evaluation is used to provide a balance between generating grades and promoting learning (Weimer, 2002). We set out to challenge our students to be more fully engaged in both the learning and assessment process. The *Principles of Engagement* (Cambourne, 2002) framework supports this task:

- Learners are more likely to engage deeply with demonstrations if they believe that they are capable of ultimately learning or doing whatever is being demonstrated.
- Learners are more likely to engage deeply with demonstrations if they believe that learning whatever is being demonstrated has some potential value, purpose, and use for them.
- Learners are more likely to engage with demonstrations if they are free from anxiety.
- Learners are more likely to engage with demonstrations given by someone they like, respect, admire, trust, and would like to emulate. (p.28)

Summary of Purpose

Based on our experiences using learner-centered assessment, we will argue that when students are asked simply to demonstrate what they have learned, they dedicate more time, show more creative output, and are often more successful than when answering questions on a traditional assessment measure. Research has demonstrated that students who create their own assessment must show that they understand the information by re-interpreting it in a different way, the very definition of deep learning (Atherton, 2005; Saljo, 1979). When professors require that students really think about what and how they have learned, they are encouraging further learning to occur (Bransford et al., 2000). While the authors do relay numerical information relevant to their courses, it is important to note that this is not an empirical study and, therefore, "data" was not systematically analyzed. Demographic information, for example, is provided to give the reader a context for interpreting the information that follows. The experiences of students and instructors will be discussed broadly so as to inform on an innovative higher education teaching methodology. This instructional article will include reports of class demographics; descriptions of class experiences with new assessments; and a discussion focused on strengths, challenges, and applicability of learner-centered assessment methods.

Education Class Demographics

Introduction to Language Arts (EDU 300) is considered an entry-level, required course for admission to the undergraduate Teacher Education program at Meredith College, a private women's institution. Education is not a major at our institution, so students may select any major and receive a teaching license in one of the following areas: birth-kindergarten, kindergarten-sixth grade, sixth grade-ninth grade, or kindergarten-twelfth grade. The official course description reads:

> This course will address the research, theory, and instructional practices related to teaching the language arts. Emphasis will be given to methods for fostering development in all language processes: speaking, listening, writing, and reading. Students will examine process writing in detail and observe/assist in a classroom.

Students do not have to be admitted into the Teacher Education Program to enroll in the course, and it has only one pre-requisite. However, students must pass the course with a grade of "C" or better in order to be admitted into the program. It is a broad-based course which introduces students to a myriad of topics in language arts, as well as methods for implementing reading and writing teaching strategies within the classroom. There is also a field experience component where students are required to observe/assist in an assigned classroom, from first through eighth grade, for a minimum of 8 hours over the course of the 16-week semester. They are also required to interview their field experience teacher on his/her writing practices and teaching philosophy.

The following scenario reflects the author's experience with one section of this course offered during the spring 2010 semester. Twenty female students (16 juniors, 3 sophomores, 1 provisional teaching license) were enrolled in the course. Since all students were preparing to enter the Teacher Education Program, intended majors were not relevant.

The Education Experience

After a class discussion with my pre-service teachers and reading their reflections on assessment, I had planned and prepared my students for a traditional midterm assessment. Although I knew it was not a method of assessment I liked or promoted, I felt I had to have something to measure my students' knowledge. My thinking correlated with the following findings by Black & Wiliam (1998):

> Tasks have to be justified in terms of the learning aims that they serve, and they can work well only if opportunities for pupils to communicate their evolving understanding are built into the planning. Discussion, observation of activities, and marking of written work can all be used to provide those opportunities, but it is then important to look at or listen carefully to the talk, the writing, and the actions through which pupils develop and display the state of their understanding. (p.143)

I had the naive assumption that because I had a ready-made test of questions, the students would absorb the knowledge from the text and our course discussions if they so desired, and display their understanding through rote memorization, if only they had the will to do so (von Glasersfeld, 1996). However, I knew this assessment devised of true/false, fill in the blank, short answer, and matching questions was not the method for these students. I could not in good conscience offer them an assessment that was in direct contrast to the effective teaching and learning practices I was attempting to model. I enlisted the help of my students and requested that they provide suggestions for an alternative way to measure their knowledge. I received many responses ranging from creating a lesson plan to playing a game of Jeopardy. I coupled some of their

ideas with some of my own and created a 4 x 4 Think-Tac-Toe (see Appendix A). A Think-Tac-Toe is designed like the game Tic-Tac-Toe, but instead of blocks for X's and O's, there are blocks of assignments. The students had 2 hours during class to complete 4 activities of any directionality (vertical, horizontal, diagonal, four corners) on the form. I chose to use the Think-Tac-Toe format because it allowed me to retain some control over the level of difficulty of each block, as well as provide a form of differentiation for students by addressing a variety of intelligences. Additionally, there was a specific task (designing a lesson plan) that I wanted to place in several locations to ensure that most students would select this option in order to meet course standards.

I was very excited about this constructivist approach to learning, but nervous that I would not get the information I desired. I shared my idea and final product with my colleagues who raised valid concerns: "How will you grade this? How will you know if they know the information? Will they have enough time? Aren't you letting them out easy?" I did not know the answers to these questions, but knew I had to take the risk. The students did not know how they were going to be tested, but they did know the topics from a prepared study guide. After thinking through the process, I knew that my nervousness about this assessment stemmed from having to release control over the information and how it was applied. Weimer (2002) states, "Constructivism challenges faculty expertise, not so much arguing against its validity as objecting to its exclusivity, opening and legitimizing students' interaction with the content" (p.13).

The reward of taking this minor risk was that not only did every student pass the exam, but they did so with flying colors! They were thoughtful, creative, reflective, insightful, and downright impressive. I could not say the same for the previous responses given when I used a traditional method of assessment. Table 1 shows a comparison of a traditional midterm question with response and the same question addressed by a student during the learner-centered assessment. The improvement in quality of work is clearly demonstrated by this example. The students had finally produced the quality of work that I knew they were capable of as future educators. I could visualize my students in every one of their creations, and it was so much fun to grade.

However, there were difficulties involved with this type of assessment. I could not create a variety of rubrics for each and every square, but instead I had to use a generic rubric which measured accuracy, creativity, completion of required components, and conventions of writing based on a twenty-five point scale. It was also extremely time consuming to grade and provide feedback for students because they were truly individual creations.

Psychology Class Demographics

Adolescent Psychology (LA3034) is an upper-level elective offered to any student who has completed Introduction to Psychology at Delaware Valley College, a small, private co-educational college. The official course description reads:

This course studies the development and behavior of adolescents with a focus on understanding the adolescent in terms of family, peers, school, culture, and the community at large. Identity development, delinquency, and sexuality will all be examined with an emphasis on how to provide services to the adolescent in need.

This paper reflects on the author's experiences with one section of this course, offered in the spring semester of 2010. Twenty-three students were enrolled in the class; however, one student never attended this class and, therefore, is not included in this reflection. Of the remaining twenty-two students, sixteen were female and six were male. Three students were sophomores, six were juniors, and thirteen were seniors. Five students had declared Counseling Psychology as their major; two had declared a Psychology minor. Students in the Counseling Psychology major may choose Adolescent Psychology out of nine courses as one of their advanced psychology courses. For a minor, students may select any five psychology courses of their choice. Three students had declared Criminal Justice Administration as their major; these students may choose from either Adolescent Psychology or Abnormal Psychology (LA4014). The remaining students were of various majors, none of which require or recommend Adolescent Psychology. While the authors acknowledge that simply receiving course credit is a form of extrinsic motivation, since students have a multitude of courses to choose from, it is reasonable to assume that intrinsic motivation played a strong role in students' performance in this particular course. Based on the majors represented in this class, it is reasonable to assume that most students were intrinsically motivated to enroll in this course. As previous researchers have noted (e.g., Runco, 2004; Sternberg, 2000), intrinsic motivation is linked to creativity; thus, it was expected that these students were capable of generating innovative products.

The Psychology Experience

For their first assessment students were given a two-part exam consisting of a section of multiple-

Table 1
Comparison of Assessments for Education Experience

Traditional Assessment Question	Learner-Centered Assessment Option
List the five stages of the reading process.	Write a descriptive scenario, story, or poem which highlights the five components of the reading process.
1. Pre-reading	When we read, we go on a wild ride
2. Reading	A ride in which we are not alone, with great characters on our side!
3. Responding	Before jumping into a great new book
4. Exploring	There are some steps at which you must take a look
5. Applying	**Pre-reading** is the first of your steps
	It will help you go exploring to great new depths
	During the pre-reading stage you will establish a purpose and goal
	If you do not build background knowledge, it will surely take a great toll
	Once you have done you pre-reading to preview the reading
	Into the **reading stage**, you will go speeding!
	Reading takes on many shapes and forms
	You can read by yourself, in groups, with a teacher, or with a slew of book worms
	Reading requires lots of strategies and skills
	Be ready for a great adventure full of turns and spills
	Once you have finished reading you will surely have a lot to say
	You think to yourself, "How do I write down all that I have learned, I just can't think of a way"
	Do not fret, you have many choices
	You can **respond** in reading logs or discuss with your voices
	The responding stage gives you a chance to summarize the book
	You will get a chance to reflect and take a new look
	Now, off to the **exploring stage** you must go
	There are texts to be studied, authors to be examined, and words to know!
	You have made it through pre-reading, reading, responding, and exploring
	The though of now **applying** seems awful luring!
	To apply takes a book to a great new place
	Create a project, connect to other books, but remember it is not a race
	Reading is something that is personal to you
	If you follow your 5 steps, you will soon be a reading "wiz" too! (K.Herrmann, 2010).

choice questions and a section of short-answer essay questions. The exam questions were generated using supplementary materials supplied by the textbook publishing company. I was disappointed with their lackluster results. I felt the students had demonstrated excellent understanding in class discussions, but only average comprehension on the exam. Many students also completed the exam quickly, but they did not earn high marks leading me to question the extent to which their thoughtfulness was devoted to the exam content. When I asked the students for feedback regarding the assessment process in the spirit of Cambourne (2002) and Vandenberg (2009), they too were dissatisfied with their results. One student eloquently said, "Class is fun, but the test was not. I didn't get a chance to show you what I know." I agreed whole-heartedly, but I was unsure of how to proceed.

I decided to enter completely unfamiliar territory and place the assessment in the hands of the students. For their second "exam," I told students to "Show Me What You Know." Students were told they must create a way of demonstrating their understanding of information on our most recent four units: Identity, Family, Peers, and Sexuality. I offered suggestions such as creating a magazine for adolescents or a guide for parents of teens. They also were instructed to give a brief presentation to the class in which they must show their end products and describe what they did and why. Grading rubrics were provided (see Appendices B and C).

Their products varied greatly, ranging from educational games to collages to magazines. The presentations were wonderful. Students were proud of their work and enjoyed seeing what their classmates had created. I was enthusiastic as well. The traditional assessment format that I utilized with their first exam tested a list of disconnected facts rather than usable knowledge (Bransford et al., 2000). Table 2 shows a comparison of several traditional exam questions and answers assessing knowledge about psychopathology in adolescence and the same concepts addressed by a student during the leaner-centered assessment. The example from the learner-centered approach demonstrates that students were able to understand the information and transfer it to a new context. They show deep learning: they had applied their knowledge in a novel and creative way (Atherton, 2005; Saljo, 1979). Furthermore, students dedicated much more time and effort on the learner-centered assessment than they had on the traditional exam. One student, for example, informed me that I had "tricked him." He informed me that instead of studying for one to two hours like he would for a typical exam, he had spent three days preparing his product for the learner-centered assessment. Their effort resulted in outstanding products, and we were all thrilled by the experience.

I did, however, face several challenges with this assessment approach. First, most students wrote using prose and did not include any references which created two problems. Regarding language, there were some words and phrases that I found inappropriate for college writing. Without references, when a student included incorrect information, I had no way of determining where the misunderstanding had occurred. Was I unclear in class? Did the student find the misinformation on a website? To address this dilemma, for their third "exam," additional instructions were added regarding references. Students were told to provide the source for information, using internal documentation (APA format) or footnotes.

The other major challenge involved grading. The products were so different from each other that I had difficulty determining an appropriate standard. Also, while their presentations did provide insight into their thought process, they were brief, so students did not go into much detail. For their next "exam," I decided to require a reflective write-up in addition to the final product to aid in my evaluation process. I provided students with questions to address in their reflection that asked them to explain their choices:

1. What did you choose to create as a way of demonstrating your knowledge? Why did you make this choice?
2. Which concepts did you select from each unit? Why did you select these particular concepts?

3. Overall, what did you learn about adolescents in these units that will help you in the future?

The reflection paper also was to be written using APA format. A grading rubric is provided in Appendix D.

The alterations in the instructions proved successful. Students' products retained their creativity and individuality, but were more professional than what they had completed the previous time. The reflections aided students in thinking about what and how they understood the material (Bransford et al., 2000), which pushed their learning even further. Several students wrote personal notes telling me how much they enjoyed the class, including these "exams." For the first time, in addition to loving teaching, I also found pleasure in assessment. I was able to assess each student's growth from one "exam" to the next and also to see the class standard rise. It is certainly an approach I will continue to use.

Discussion

As the authors began to share their excitement about the newly redesigned assessments and the success of the students, it became clear that our backgrounds are really not very divergent. Fosnot (1996) states, "Psychology – the way learning is defined, studied, and understood – undergirds much of the curricular and instructional decision making that occurs in education" (p. 8). We both began to realize that through "the process of shifting our attention to the constructive activity of the learner, we recognize[d] the need to anchor learning in real-world or authentic contexts that make learning more meaningful and purposeful" for our students (Bonk & King, 1998, p. 27).

Strengths

Simply put, using learner-centered assessment brought fun back into the classroom. Our students reported enjoying completing their project and seeing assessment as a process, rather than just an end product. As professors, we felt enthusiasm when grading their projects, rather than a dreary sense of resignation typically experienced when evaluating exams. We were nurturing and developing lifelong learning skills in our students and giving them the confidence to use them (Weimer, 2002).

Another advantage to this assessment approach was the variation in products that reflects diversity of students. The Think-Tac-Toe capitalizes on Gardner's multiple intelligences (1983), allowing students to

Table 2
Comparison of Assessment for Psychology Experience

Learner-Centered Assessment	Traditional Assessment

General symptoms of _____ include excessive fatigue, inappropriate guilt, difficulty concentrating and being decisive, and dwelling on thoughts of death.
  a. bereavement
  b. eating disorders
  c. DEPRESSION
  d. self-mutilation
	I chose to create the diary of an adolescent girl, Charlene, who is in high school… I believe that this is a unique way of showing how the information I learned in these units would apply to understanding real life situations in an adolescent's life.
	
	Dear Diary…
	What a shock! Today in school I learned that a girl in my gym class tried to kill herself. I don't know her real well cause I only spend time with my teammates. Everyone is talking about it & there were counselors all over talking about depression and what to do. I don't think they know how much pressure we are under. Some of the girls on the team are so worried about keeping themselves in shape they lose most of their food. I won't do that but some days I will skip lunch to try & keep in shape. But I would never try to kill myself.

In adolescence, more _____ attempt suicide; more ____ complete or "succeed" at it.
  a. boys; boys
  b. boys; girls
  c. GIRLS, BOYS
  d. boys; girls
	Charlene's classmate is one of 3 million adolescents struggling with depression. Warning signs may include changes in eating, sleeping, grades, and social abnormalities lasting more than several weeks (7). The counselors at her school may have advised friends to ask questions if a friend talks about suicide. Students may also be advised to see if their friend has a plan on how they would commit suicide and in any case to stay with them and sincerely try to get them to go for help or ask for help for them.

A characteristic of anorexia is _____; bulimia is characterized by _____.
  a. RESTRICTED EATING; BINGING & PURGING
  b. restricted eating; over-eating
  c. over-eating; restricted eating
  d. binging & purging; restricted eating
	Adolescent girls like Charlene admit that they feel like they are under pressure. Hormonal and body changes conspire together at this age to create changes in adolescent girls that society does not aspire to. The media portrays sexy models that often bear little resemblance to the person that the adolescent female sees in her mirror (8). In response, some girls like Charlene's teammates may resort to purging. Anorexia Nervosa and other eating disorders are becoming more common. Research has shown that a combination of Prozac and CBT are effective for about 60% of adolescents suffering from depression (9). For adolescents struggling with eating disorders, intervention is paramount. This life threatening behavior can be at times treated with behavioral therapy (8).
	
	(Numbers refer for sources cited.)

select the products that best suit their particular interests, talents, and skills. Similarly, the open-ended nature of "Show Me What You Know" also permitted students to showcase their best work. In the psychology class, one student created a website for parents of adolescents while another created a comic strip. Education students' products varied from original poems to newsletters. The range of products generated was truly incredible.

A final strength of learner-centered assessments was that students demonstrated they could apply knowledge in a novel and creative way. Because learning is highly individualized and often considered during instruction, multiple intelligences should also be considered when developing assessments (Gardner, 1983). Certainly the output of a multiple-choice exam cannot be viewed as creative. However, even short-answer essay questions proved to be highly structured in the type of responses they elicited from students. Students relied on the same pieces of information, and they utilized those pieces in very similar ways. However, with the learner-centered assessment methods, students focused on various aspects of the material and applied them to real-world circumstances. Without precise directions from their professors, students were free to determine the resources and activities that will help them meet their learning objectives (Jonassen, 2000).

Challenges

While this is an assessment approach we believe is valuable to the learner-centered approach of education, we do acknowledge its challenges in implementation. In both settings, the class size was relatively small (education class: n=20; psychology class: n=23). At larger institutions, the attention and time required to grade each assessment may be overwhelming to faculty. Also, an important aspect of this assessment was students' sharing of their work with each other. This activity was also time-consuming and may not be feasible with a larger number of students.

Perhaps the biggest challenge we faced were our own issues of control. As its name implies, a teacher-centered approach makes the professor the center and expert in the classroom. The professor selects the content of assessment and determines the correct (and incorrect) answers ahead of time. In contrast, the learner-centered approach requires that professors and students collaborate in the educational process with learners playing an active role in selecting and defining both challenging and intrinsically motivating activities and with instructors providing appropriate levels of support (Gould, 1996). Professors must not see themselves as the only ones with knowledge to provide, but instead they must consider that students may have expertise to offer as well (Weimer, 2002).

Applicability and Future Discussion

While we do believe learner-centered assessment is possible and advantageous to all students and courses, we also advocate that particular methods might be best suited for depending on learner, teacher, and class characteristics. The Think-Tac-Toe method necessitates a long class time, unless it were modified to be a take-home assignment. For instructors and students who are uncomfortable with ambiguity, this approach may be more appealing than the "Show Me What You Know" method. While "Show Me What You Know" provides few limits on students' creativity, it also demands their maturity and, therefore, may not be appropriate for introductory courses.

We believe learner-centered assessments deserve much more attention in the literature and in the classroom. Not only do they follow in the tradition of constructivism explored by theorists such as Piaget (1977) and Vygotsky (1986), but also speak to Bloom's (1956) taxonomy as well. In Bloom's (1956) original report, he found that over 95% of exam questions required students to recall information, what he considered the lowest possible cognitive level. Bloom hoped educators would aim towards synthesis (collecting, creating and developing information) and evaluation (arguing, assessing, and appraising information). Anderson revisited these categories, switching the order of synthesis and evaluation, but still agreeing that they are the two highest cognitive levels (Anderson & Krathwohl, 2001). The assessments described in this article demand that students synthesize and evaluate information in creating their "exams." Our students demonstrated higher levels of learning, and we now had products to show for it. Barr and Tagg (1995) describe the newest shift taking place in higher education:

> A paradigm shift is taking hold in American higher education. In its briefest form, the paradigm that has governed our colleges is this: A college is an institution that exists to provide instruction. Subtly but profoundly we are shifting to a new paradigm: A college is an institution that exists *to produce learning*. This shift changes everything. It is both needed and wanted. (p.12)

We concur and hope our experiences aid in this shift.

References

Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching and assessing: A revision of Bloom's Taxonomy of educational objectives: Complete edition,* New York : Longman.

Atherton, J. (2005). *Learning and teaching: deep and surface learning.* Retrieved from http://www.learningandteaching.info/learning/deepsurf.htm.

Barr, R. B., & Tagg, J (1995). From teaching to learning: A new paradigm for undergraduate education. *Change, 27* (6), 12-25.

Black, P., & Wiliam, D.(1998). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan*, 8*0(*2), p139-148.

Bloom, B. S. (1956). *Taxonomy of Educational Objectives, Handbook I: The Cognitive Domain.* New York: David McKay Co, Inc.

Bolger, N., & Kellaghan, T. (1990). Method of measurement and gender differences in scholastic achievement. *Journal of Educational Measurement, 27*(2), 165- 174.

Bonk, C. J., & King, K.S. (1998). L*earner-centered technologies for literacy, apprenticeship, and discourse*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). *How people learn: Brain, mind, experience, & school*. Washington, DC: National Academy Press.

Cambourne, B. (2002). Holistic, integrated approaches to reading and language arts instruction: The constructivist framework of an instructional

theory. In Farstrup, A.E., & Samuels, S.J. (Eds.), *What Research has to say about reading instruction* (pp. 25-47). Newark, DE: International Reading Association.

Fosnot, C. T. (1996). In Fosnot, C.T. (Ed). *Constructivism: theory, perspectives, and practice* (pp. 8-33). New York, NY: Teachers College Press.

Gardner, Howard. (1983). *Frames of Mind: The Theory of Multiple Intelligences*. New York: Basic Books.

Gerdy, K. B. (2002). Teacher, coach, cheerleader, and judge: Promoting learning through learner-centered assessment [Revised version]. 2001 AALL/LexisNexis Call for Papers competition.

Gould, J. S. (1996). A constructivist perspective on teaching and learning in the language arts. In Fosnot, C.T. (Ed.). *Constructivism: Theory, perspectives, and practice* (pp. 3-7). New York, NY: Teachers College Press.

Jonassen, D. H. (1999). Designing constructivist learning environments. In C.M. Reigeluth (Ed.), *Instructional-Design Theories and Models* (Vol. II, pp. 215–239). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Jonassen, D. H. (2000). Revisiting activity theory as a framework for designing student-centered learning environments. In D.H. Jonassen & S.M. Land (Eds.), *Theoretical Foundations of Learning Environments* (pp. 89–121). Mahwah, New Jersey: Lawrence Erlbaum Associates.

Mayer, R. H. (1999). Designing instruction for constructivist learning. In C.M. Reigelluth (Ed.), *Instructional-design theories and models: A new paradigm of instructional theory, Volume II.* Mahwayh, NJ: Lawrence Erlbaum Associates.

Murphy, R. J. L. (1982). Sex differences in objective test performance. *British Journal of Educational Psychology, 52,* 213- 219.

Norman, D. A., & Spohrer, J. C. (1996). Learner-centered education. *Communications of the ACM, 39*(4). 24- 27.

Pedersen, S., & Liu, M. (2003). Teachers' beliefs about issues in the implementation of a student-centered learning environment. *Educational Technology Research & Development, 51*(2), 57-76.

Pellegrino, J. W., Chudowsky, N., & Glaser, R. (2001). *Knowing what students know: The science and design of educational assessment.* Washington, DC: National Academy Press.

Piaget, J. (1977). *Equilibration of cognitive structures*. New York, NY: Viking.

Popham, W. J. (2005). F for assessment. *Edutopia.* Retrieved from http://www.edutopia.org/f-for-assessment.

Resnick, L. B., & Resnick, D. P. (1992) Assessing the thinking curriculum: New tools for educational reform. In B.R. Gifford and M.C. O'Connor (Eds.), *Changing assessments: Alternative views of aptitude, achievement, and instruction.* Boston: Kluwer.

Runco, M. A. (2004). Creativity. *Annual Review of Psychology, 55,* 657- 687.

Schmitt, F. F., & Lahroodi, R. (2008). The epistemic value of curiosity. *Educational Theory, 38*(2), 17-212.

Sternberg, R. J. (2000) A broad view of intelligence: The theory of successful intelligence. *Consulting Psychology Journal: Practice and Research, 55*(3), 139-154.

SÄLJÖ, R. (1979). *Learning in the learner's perspective 1: Some commonplace misconceptions.* Reports from the Institute of Education, University of Gothenburg, 76.

Shepard, L. A. (2000). The role of assessment in a learning culture. *Educational Researcher, 29(7)*, 4–14.

Vandenberg, D. (2009). Critical thinking about the truth in teaching: The epistemic ethos. *Educational Philosophy and Theory*, *41*(2), 155-165.

Von Glasersfled, E. V. (1996). Introduction: Aspects of constructivism. In Fosnot, C.T. (Ed.), *Constructivism: theory, perspectives, and practice* (pp. 3-7). New York, NY: Teachers College Press.

Vygotsky, L. (1986). *Thought and language.* Cambridge, MA: MIT Press. (Original work published 1962).

Weimer, M. (2002). *Learner-centered teaching: five key changes to practice*. San Fransisco, CA: Jossey-Bass.

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Appendix A
EDU 300 Midterm Assessment/Think-Tac-Toe/2010

Write an essay defining, explaining, and providing examples of the five stages of the **Writing Process**.	Select a book and identify ways you could teach with it using the **6 Language Arts**.	Design a lesson for any content area or grade level on a language arts topic of your choice. You may use the mini-lesson template.	Create a parent newsletter defining, explaining, and providing examples of **Phonemic Awareness** in young children.
Use Comic Book Creator or your own illustrating skills to design a comic strip in which the characters demonstrate the three **types of listening**.	Design a lesson for any content area or grade level on a language arts topic of your choice. You may use the mini-lesson template.	You have completed your training in *Principles of Fluency Instruction* and are an expert in fluency and fluency development. Design a PowerPoint which can be used as a presentation to teachers and staff at your school.	Illustrate or provide a written example of the **stages of spelling**.
Select a book and identify ways you could teach with it using the **6 Language Arts**.	Design a Jeopardy game which incorporates clues and answers for the **alphabetic principles, parts of speech, steps to learn to spell a word, rules of grammar, and the 6 language arts**.	Write a descriptive scenario, story, or poem which highlights the five components of the **Reading Process**.	Write a case study which exemplifies a child or adolescent using or attempting the four types of **word knowledge**.
Design a lesson for any content area or grade level on a language arts topic of your choice. You may use the mini-lesson template.	Create a parent brochure defining, explaining, and providing examples of the **types of reading**.	Write a story or poem which contains one or more examples of the following **literary devices**: personification, hyperbole, imagery, comparison, symbolism, tone.	Develop a quiz on the following topics: SES and vocabulary, invention of the printing press, left-handed writers, rubrics, and synonyms.

Appendix B
Psychology Assessment Rubric for Show Me What You Know

Criteria for Grading Product	0	3	6	9
Creativity & Thoughtfulness	Project appears as if completed right before class	Project appears as if several hours was spent creating it	Project appears if several days was spent creating it	
Concepts- Identity5	Project demonstrates poor knowledge in chapter 5.	Project demonstrates fair knowledge in chapter 5.	Project demonstrates good knowledge in chapter 5.	Project demonstrates excellent knowledge in chapter 5.
Concepts- Family	Project demonstrates poor knowledge in chapter 6.	Project demonstrates fair knowledge in chapter 6.	Project demonstrates good knowledge in chapter 6.	Project demonstrates excellent knowledge in chapter 6.
Concepts- Peers	Project demonstrates poor knowledge in chapter 7.	Project demonstrates fair knowledge in chapter 7.	Project demonstrates good knowledge in chapter 7.	Project demonstrates excellent knowledge in chapter 7.
Concepts- Sexuality	Project demonstrates poor knowledge in chapter 8.	Project demonstrates fair knowledge in chapter 8.	Project demonstrates good knowledge in chapter 8.	Project demonstrates excellent knowledge in chapter 8.
Sources	Project contains sources (text, notes) for no information	Project contains sources (text, notes) for some information	Project contains sources (text, notes) for most information	Project contains sources (text, notes) for all information

Appendix C
Psychology Assessment Rubric for Show Me What You Know Presentation

Criteria for Presentation	0	1	2	3
Professionalism	No eye contact; Lots of pauses; < 1 minute	Only looks at 1 person; Some pauses; 1 minute	Occasionally scans audience; Few pauses; 2 minutes	Scans audience; Rarely pauses; 3 minutes
Content	No summary or no examples	Basic summary of project with few examples	Decent summary of project with few examples	Excellent summary of project with several examples
Display	No finished project available for class to see, hear, etc.	Finished project is difficult for class to see, hear, etc	Finished project is a bit hard for class to see, hear, etc.	Finished project is easy for class to see, hear, etc.

Appendix D
Psychology Assessment Revised Rubric

Criteria for Grading	3	5	7	10
Creativity & Thoughtfulness	Project appears as if completed right before class	Project appears as if several hours was spent creating it		
Concepts- Media	Project demonstrates poor knowledge of topic	Project demonstrates fair knowledge of topic	Project demonstrates good knowledge of topic	Project demonstrates excellent knowledge of topic
Concepts- Physical Health	Project demonstrates poor knowledge of topic	Project demonstrates fair knowledge of topic	Project demonstrates good knowledge of topic	Project demonstrates excellent knowledge of topic
Concepts- Psychopathology	Project demonstrates poor knowledge of topic	Project demonstrates fair knowledge of topic	Project demonstrates good knowledge of topic	Project demonstrates excellent knowledge of topic
Concepts- Delinquency	Project demonstrates poor knowledge of topic	Project demonstrates fair knowledge of topic.	Project demonstrates good knowledge of topic	Project demonstrates excellent knowledge of topic
Sources	Project contains sources (text, notes) for no information	Project contains sources (text, notes) for some information	Project contains sources (text, notes) for most information	Project contains sources (text, notes) for all information
Mechanics	Numerous mistakes in grammar, spelling, and punctuation make it difficult to reading	Most grammar, spelling, and punctuation used properly; paper is relatively easy to understand		