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Proposal for the Florida Department of Education: **Smart Test**

Smart Test is not a proposal to modify an existing testing and quiz system; it involves rethinking the purpose and outcome of testing students. Most will agree that the current testing models are in place in an attempt to determine what a student has learned or memorized prior to the testing period and to determine if the teaching process was successful. Regardless of the outcome the class moves forward to a new subject. Smart testing utilizes current technologies and methodologies to teach students, share teaching strategies that work and provide streamlined study methods. The following paper will outline the Smart Testing model; we will answer the question as to how standardized testing can fit into the smart testing model, followed by an outline brief on how the model may be implemented over the next two years.

Smart Test, Utilizing Current Technologies

We are not discussing simply taking an online test (or quiz). We need to ask ourselves this year and in each year to come, what can the current and future technologies do to aid us as educators in *teaching* students, *sharing* teaching strategies and *streamlining study* methodologies?

Teaching Students

Smart Tests, Teach Students

When I ask a student in a multiple choice question in a computerized test under the current model, for example, After a unique election in 1801, who was elected as the third president of the United States? I will get an answer. After answering, the student does not know if they got the question right or wrong. Once a current test is completed it is turned in, a total grade is provided to the student, a teacher may review the test with students, regardless most of the students don't care which questions they got incorrect and they certainly do not know the correct answer moving forward. Even the best teachers who see high test scores assume the lesson was learned, period.

The act of taking a smart test is a two-step process. First, the question is asked, Who was the third president of the United States? If the student answers, Thomas Jefferson, the next question appears on the screen, the student is not asked about this election again during the test. IF the student answers incorrectly a screen appears with the following: *After one tie vote in the Electoral College and 35 indecisive ballot votes in the House of Representatives, Vice President Thomas Jefferson is elected the third president of the United States over his running mate, Aaron Burr.* Following this paragraph the next unrelated question appears, the student moves on with the test. After a random time period the student who answered *incorrectly* is asked a second time a variation on the incorrectly answered question. For example, What unique election resulted in Thomas Jefferson elected as the third president of the United States? The student is offered the multiple choice answer of, one tie vote in the Electoral College and 35 indecisive ballot votes in the House of Representatives. It is our desire, under the smart test

model, that the student read the incorrect review paragraph and is able on a second attempt to answer correctly having learned from the testing process.

The process of grading a smart test is a computerized *three* step process. First, the teacher is provided two test scores for each student, one the first attempt score and two the second attempt score. Teachers can elect which scores to accept however, students were offered the opportunity to learn from the entire testing process. Second, teachers are provided a list of the top questions students answered incorrectly on each test. This information can be used to target the areas after the test in which most students did not understand or learn prior to the test. It can also be used to modify teaching strategies the following term knowing in advance which areas each year students have difficulty. And last in the three grading step process, teachers are provided a list of successful strategies to teach student the specific area students had difficulty.

Sharing Teaching Strategies, Teaching as one statewide team

Once each test is graded teachers are provided a list of successful strategies other teachers and educators have suggested to teach the areas in which their students did not answer successfully on the first attempt. After each smart test is graded teachers are provided the categories used in the test and if their students scored high in a category asked what strategies they found successful in teaching students this category. In the US history, third president example provided above the category may be US History followed by Early 1800's, First presidents, Unique elections, 6th grade, the title of the book and chapter or Thomas Jefferson. Teachers can use this information in multiple ways. One, they will be provided the strategies other teachers have suggested in areas their students had difficulty. This will allow teachers to select the best strategies and try them. Two, they will be asked to share their successful strategies. Teachers who have used a strategy offered are at a later date to score the strategies giving for example 1 to 5 stars.

Teachers teaching

As an educator, I know teachers love to teach, developing tests, editing tests, and giving tests are not as interesting as inspiring students, coming up with new strategies and learning and implementing best practices.

Streamlining Study Methodologies

There are current apps and computer websites that have been developed to help students review. The smart testing model steps upon these technologies to go leaps forward. Once test questions are entered into the smart testing system (see model outline) these questions are not just used to test students, the questions are used to help students review in the smart testing review system. For example a teacher may select with the touch of a button from 1000 questions in a given area/category which questions they want on their test, write some additional questions and select questions for review (or even open it up to all 1000 questions, which are not selected on their own test). Students can log in to the smart model on the computer or a smart phone and be given random questions in each area/category. The smart review is a funneled model. Students are first

asked one or two review questions in each area/category, and given the answer. Next they are asked additional questions *only* in areas they answered incorrectly until they have won the review. Some students may only be asked 100 questions and be done as they answered all correctly. Others may be asked 100 questions then only 10 questions pinpointed in the area they answered incorrectly. If a student has difficultly in one specific area repeatedly they are asked if they would like this to be transmitted to the teacher for review prior to the test. Why after all would students be asked all 1000 questions when they seem to have already mastered that category?

Department of Education, Standardized testing

I am proposing the current standardized testing be dismantled in favor of smart testing. The Department of Educations should, in my opinion, be in the business of educating students. All current standardized test questions can be categorized into the smart test system. These questions are then used by the Department of Education in multiple ways. One, these questions are inserted in the class smart tests at random, only a few questions inserted into each test in various categories. The results of these random questions are not tabulated into the students test score, they are provided electronically in real time to the Department of Education to allow the department to verify students at each school in each grade level students are being provided an acceptable level of education. Two, the data provided to the department is data mined. Some questions will be flagged for rewrite; if certain areas of the state (rural versus city for example) are consistently not answering a question correctly it may not be the students but the question. There are endless ways this data can be data mined to aid in providing strategies for advanced education. The information is not to be used to grade schools but to understand which schools need new strategies. Once these new strategies are implemented, and graded by the teachers they can be updated and/or shared. No longer will gifted math students in for example 5th grade be taking a 5th grade general math standardized test. Students in Algebra I honors regardless of age or grade will be given questions suitable to the algebra I category. The question is not, are 8th grade students learning 8th grade math, but are Algebra I students grasping algebra I, are Math 8 students grasping math 8.

Department of Education, Psychology

There is numerous peer reviewed studies sighting how long test should be at each grade level, how many questions are appropriate, are quizzes (which would also fall under the smart test umbrella) more appropriate than tests and at what age? Should breaks be given at set intervals? Graphically should the entire test be given on a white screen with black text or should that change over the length of the test. Students tend to move quickly thru a test, each test question is provided a *minimum* length of time. Students can elect to take longer to answer a question but they cannot move so quickly as to not have time to read each question or read the incorrect answer paragraph. All available methodologies should be utilized and implemented by the Department of Education into suggestions for teachers under Smart Testing.

Department of Education, implementation

Funds for standardized testing are better utilized to educate students and support teachers. Implementing Smart Testing is a step in that direction. Once Smart Testing is implemented it should be monitored and revised yearly utilizing updated technologies, learning models and strategies.

Implementation Outline

1. Select and hire a Smart Test implementation team
    a. Educators at all levels, Psychologists, Computer programmers, and Data miners
2. Develop an outline for K-12 **Categories**.
    a. Questions would fall under multiple categories. Class title, area of study within the class, and specific topic. Teachers writing questions for a test would only once answer Smart Test generated questions about themselves, and their classes. These questions would be centered on generating categories for each question and aiding in generating a smart test (the Smart test system would remember teachers, therefore it would not offer Algebra I category or questions to a US History teacher). Once these details are in the system, the system offers questions for the test specific to what the teacher has told the system the test is on. For example the system remembers a teacher gave a test on US History 1800's last quarter, so it would offer bullet points to select the next logical step (although the teacher can go in any direction and the system responds). The teacher then can either select questions the computer generates or type a question in Smart Test (they can also load in an image); IF the teacher writes a question the computer analyzes the question and provides probable categories via bullet points. The teacher would then select from these generated bullet points to categorize the question. For example the US History Question on Thomas Jefferson, a teacher would only be required to write the question, the computer would then analyze the question and generated categories (US HISTORY, 6th grade, honors, the book used, chapter, 1800's and/or US Presidents and if Thomas Jefferson is not listed the teacher can simply bold that text in the question for the computer to read or write in text to add the category. Note, the teacher writing a question writes the question, writes an incorrect review paragraph and a second question also with an incorrect review paragraph. This is followed by selecting bullet point computer generated categories. Although this may seem as if it is time consuming, time is saved generating questions each time any teacher in the state writes a question another teach can select. In addition review questions are generated for the teacher plus after a test the teacher simply reviews the areas difficulty as desired. All these are time saving opportunities.
    b. Following the teacher designing their test, the computer would offer review questions falling in the same categories as the questions they provided on the test. The teacher can select them all, or pick which review questions they would like students to be offered in a funneled review app.
3. Team development of and test the Smart Test database

4. Hire select best practice teachers over the summer session to write questions for a year of quizzes and tests in their subject area.
   a. This would start the system, hiring 5 to 10 teachers in each area to write questions would generate a high level of quality questions. After one year of teachers adding in questions the system would have 10's of 1000 of questions to select from. The system can not only categorize questions but rank consistently selected questions, merge like questions, remove old questions and send rewards to teachers writing quality questions.
5. Request hired best practice teachers to write simple and easy to use directions for teachers and students across the state.
6. Categorize all standardized test questions and write incorrect review paragraphs (standardized test questions are not tallied into the students score, it is up to the department as to if they want second questions for incorrect answers to be given).
7. Provide access and answers

Other concerns, Cheating

Smart tests provide questions in a random pattern, although all students are offered the same teacher written or selected questions, they are not provided the questions in the same order. It is difficult to cheat off a neighbors test when the questions are not in the same order. Teachers can, for example, select 150 questions (3 in each category, see category in the provided outline) of which they elect to have the smart test give each student 50 random questions one in each category. Students taking a test in first period are not given the same 50 questions as those in the 3rd period; this inhibits students from giving answers to other students outside of class.

Krista Waitz, Bio

As a third generation educator, I have been an educator at the university level for 12 years. Prior to being an educator, I was a senior associate in commercial architecture. While obtaining my Masters of Architecture, I researched over 100 school systems to develop my thesis: the Effects of Architecture on Educational Outcome, 1998. With three children and following job opportunities, I have personally been involved in 14 separate school systems in 4 states (7 Public School Systems, 6 private schools and 1 charter school). I have had to advocate for both ends of the educational spectrum from special needs to highly gifted opportunities. Each experience has given me great insight into the educational system, successes and failures. www.kristaw.com