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Software Evaluation Paper
Foundations of Educational Technology (Q377)

Description

      Being a teacher in an alternative middle school program that utilizes computer-based education tools, I am fortunate enough to have access to several different CBE choices to evaluate. I am choosing to evaluate McGraw-Hill's Passkey Learning System which we have been using in our program for the past year. Passkey is marketed (and priced) as an Integrated Learning System, though it does not fully meet all of the textbook's requirements for an ILS. According to the information in the book, I would categorize Passkey as wide-ranging tutorial courseware. Similar to an ILS, it is a LAN networked program containing detailed student reporting, several grade levels of courseware, and specific instructional objectives integrated into the standard curriculum. However, my experience has shown that it does not contain a sufficiently complete curriculum or enough lesson material to stand alone as a total instructional source, though Passkey's representatives give the impression otherwise. Passkey's intended audience spans grades three through twelve and it's purpose is to deliver core content instruction in reading, writing, mathematics, and science.

Dimension 1 - Epistemology

Objectivism⬅ **Pk**   ➡*Constructivism*

      For each dimension, I will include a representation of the continuum found in Reeves's article along with a "Pk" indicating where I place the Passkey program on that continuum. I have determined that Passkey relies almost entirely on the objectivist approach because the program was created strictly to convey a specific portion of knowledge from the software into the learners' minds. This portion of knowledge is compiled based on information from experts in the respective subject areas, existing completely outside of the learner. Passkey assesses the exact amount of knowledge successfully transferred to the learner through pre and post tests.

Dimension 2 - Pedagogical Philosophy

Instructivist⬅   **Pk**   ➡*Constructivist*

      In addition to many of the reasons stated in dimension 1, I feel that Passkey leans toward the instructivist philosophy because it has a very structured set of objectives organized in a hierarchy progressing from lower to higher order skills. Furthermore, these objectives are taught utilizing a direct instructional method. However, Passkey does take the learners' experience into consideration in a few ways, which is why I have not placed the software to the absolute left in the continuum. The software can administer diagnostic tests which measure prior knowledge and automatically assign lessons to compensate for deficient skills, thus skipping already familiar material. Also, the software can give pretests before each lesson, which will allow the student to bypass the tutorial if they achieve an acceptable score.

Dimension 3 - Underlying Psychology

Behavioral← _____**Pk**_____ ➡*Cognitive*

      Again, I place Passkey toward the left of the continuum. The structure of the lessons seem to rely heavily on behavioral methodology. A stimulus is first presented in the Tutorial content of the lesson. Then, a response is demanded in the Guided Practice portion of the lesson with immediate feedback given for correct or incorrect answers. Correct answers offer positive reinforcement in that the student is allowed to progress to the next question. Incorrect responses must be repeated until correct. Further response is demanded in the Post Test section of the lesson in which feedback comes in the form of a percentage score. Passing scores allow the student to progress to another lesson while failing scores require that the lesson be repeated in its entirety. The only recognizable cognitive psychology influence is contained in the presentation of the tutorial material which often employs a variety of learning strategies including memorization, direct instruction, drill-and-practice, and deduction, but the overall structure of the lesson represents a classic example of behavioral psychology.

Dimension 4 - Goal Orientation

Sharply-focused← **Pk** _____ ➡*Unfocused*

      As mentioned in dimension 1, Passkey incorporates a huge hierarchy of very specific learning objectives which are completely measurable through the software's internal assessment tools. This is likely because Passkey attempts to align its content to as many state core curriculums as possible, which are usually sharply-focused themselves. Missouri, however, is a notable exception, whose Show-Me Standards tend to be more broad and unfocused in nature. Fortunately, it is very easy for me to frame Passkey's sharply-focused objectives under the umbrella of the more unfocused Show-Me Standards. Furthermore, a non-reasoning device such as a computer program cannot reliably measure the intangible attainment of an unfocused objective.

Dimension 5 - Experiential Validity

Abstract← _____**Pk**_____ ➡*Concrete*

      The Passkey program primarily uses abstract activities and information in the content of its lessons. Frequently, the lessons teach only facts, processes, or algorithms in isolation without any connection to the real world though this is not absolutely the case. Occasionally, realistic situations are presented to illustrate a specific point. However, it is my belief that a computer program can never truly present information in an absolutely relative and concrete context because educational software cannot know its users as individuals. What may be a relative, real-life experience for one student may be completely foreign to another. A program can try to present situations which are realistic, but only a teacher who knows the learner personally can assure that the context is relative to the individual.

Dimension 6 - Teacher Role

Didactic← **Pk** →*Facilitative*

       In my experience, Passkey rates close to the middle of this dimension. While the program is intended to make the teacher a facilitator, I found that I was having to spend inordinate amounts of time maintaining the system, troubleshooting, restructuring it to meet my students' needs, aligning the program to the district curriculum, and figuring out a system to assess students' progress and assign grades. I found that I didn't get to spend near as much time as I would have liked in one-on-one instruction with my students. In fact, if not for my classroom assistant, the students would not have been nearly as successful as they were. Still, I did not have to spend time developing lesson plans and grading papers, so I had much more time than I would have without the program. With the first year behind me and the experience that I have gained, I predict that this year will be much smoother in this area.

Dimension 7 - Flexibility

Teacher-Proof←**Pk** →*Easily Modifiable*

       Unfortunately, Passkey is a major bomb in the flexibility department which was one of the main reasons that I went shopping for a new program midway through the year to supplement Passkey. I personally feel that with adequate training, software does not need to be "teacher-proof." On several occasions, we found errors in the Passkey material including two identical multiple choices on a test, many misspelled words, incorrect answers, and misleading information, all of which I am completely powerless to change. The reports do not even allow me to specify the information I need or take them to another computer for printing. True, all of these safe guards protect the integrity of the program, but they are extremely frustrating to teachers.

Dimension 8 - Value of Errors

Errorless Learning← **Pk** →*Learning from Experience*

       Passkey, for the most part, facilitates only errorless learning. As previously mentioned, the Guided Practice portion of the lessons allows users to continue making choices until they pick the right answer. Each selection, wrong or right, gives feedback, but the user does not even have to read the material. They are free to guess until they make the right choice and then move on. Still, since the learner does have the opportunity to make a wrong choice and then study what they did wrong, it does have some elements of learning from experience, but none so powerful as the article's example of the simulated hospital ethics committee.

Dimension 9 - Origin of Motivation

Extrinsic← _____ **Pk** _____→*Intrinsic*

        Given the abstract nature to the source of student motivation, this is a particularly difficult dimension to evaluate. Students generally enjoy working on the computers more than they enjoy working out of a textbook and writing by hand. The at-risk students which I serve perform better on the whole than they did in the traditional school setting, but it is unclear whether that is due to the computer learning environment, the comfortable classroom environment which I strive to create, or some other factor. However, I have definitely noticed one statement from the article to be true: students using these programs are more likely to choose to study material that they already know than to learn something new. My students using Passkey seemed to go into avoidance mode when they encountered an unfamiliar or uncomfortable subject, therefore I am rating Passkey toward the extrinsic side of the motivation continuum.

Dimension 10 - Accommodation of Individual Differences

Non-existent← _____ **Pk** _____→*Multi-faceted*

        Though far from non-existent, I feel that Passkey could make many more accommodations for differing individuals. As previously mentioned, the diagnostic testing does allow individuals to be remediated or accelerated depending on their individual needs, even allowing for differences in aptitude between subject areas. Still, Passkey does not offer higher grade level content on lower reading levels nor does it offer auditory reading of on screen material at those higher grades. Learning styles are not taken into consideration at all because the information is presented in the same way to all learners. Basically, the program is best suited for strong readers and visual learners.

Dimension 11 - Learner Control

Non-existent← _____ **Pk** _____→*Unrestricted*

        Passkey does allow students to choose when they will work on which subjects. It even allows teachers to enable students to choose which lessons they work on within a subject, but unfortunately the structure of the program does not make that option feasible. With the exception of science, the material in a lesson will often refer back to a prior lesson's content, which is meaningless if the student has not chosen to take that lesson yet. As a result, I had to take away the students ability to choose their own path.

Dimension 12 - User Activity

Mathemagenic← _____ **Pk** _____→*Generative*

        Admittedly, I found the article to be a bit confusing and vague about this dimension. However, since Passkey is largely instructivist in design and it allows learners to "access various

representations of content" with almost no opportunity to create, elaborate, or represent knowledge in its mostly multiple choice format, I can only conclude that Passkey affords a largely mathemagenic environment.

Dimension 13 - Cooperative Learning

Unsupported←**Pk**　　　　　　　　　　　　　　　➡*Integral*

       Unlike the previous dimension, Passkey's place on this continuum is completely obvious. The software allows absolutely no support for cooperative learning activities. Although I have allowed my students to help each other on occasion with difficult lesson material, this is not true cooperative learning because they are not working toward a shared goal. Rather, it is a more advanced student helping a struggling student in a particular lesson's content.

Dimension 14 - Cultural Sensitivity

Non-existent←　**Pk**　　　　　　　　　　　　➡*Integral*

       Like most CBE programs, Passkey does not perform well in the area of cultural sensitivity. With the exception of a few "tokenistic gestures" such as an illustration or graphic including minority individuals or an occasional reference to minority culture, sensitivity to diverse cultures is virtually non-existent. Being that I teach in a rural, largely homogeneous, school district, I have not experienced any problems because of this deficiency, but I am sure that more diverse districts using Passkey would notice a cultural achievement gap because of the program's shortcomings in this area.

Interface and Technical Usability

       Passkey's technical performance varies depending upon your point of view. The student interface usually loads consistently, has never broken as the result of a student's response, and responds accurately to student input. However, this student reliability comes at a price. I have had to spend a great deal of time maintaining the system. The database requires daily repair and it becomes corrupted on a whim. Furthermore, despite using a daily compacting utility, the database grows larger and larger which causes it to slow down and create even more errors. As a result, I had to import student results into a clean database several times during the year which is a very time consuming process. The teacher/administrator interface is also cumbersome, inefficient, and inaccurate. Student report data was incomplete or inaccurate and therefore useless. Assigning lessons would often bog down the system and take extreme amounts of time. Given that our computers were brand new this school year, this should not happen. Overall, I found the technical usability very disappointing for such an inordinately expensive piece of software. Hopefully, future versions will correct much of these problems.

Conclusion

       I have to admit that my overall perception of Passkey is not very positive. Though I do like their methodology in teaching mathematics, I have very little else good to say. If someone was considering a purchase of this program and they asked for my opinion, I would have to encourage them to keep shopping. All educational software packages in this category are extremely expensive, but Passkey is among the highest. Furthermore, Passkey offers much less curriculum content than many other similar products on the market. It was purchased before I was hired for my position and was intended to provide a full year's curriculum for my program, but I began running out of material about 1/3 of the way through the year. My disappointment and frustration led me to begin shopping for a new software package to build my program around, thus relegating Passkey to a very expensive backup position. I personally took the initiative to research, negotiate, and find funds for a new product, finally settling on the new A+nywhere Learning System (A+LS). It is my hope that more district technology specialists will use resources such as this article to completely investigate computer-based educational software prior to purchasing rather than trusting in the salespeople's representation of the product. Ultimately, not only will valuable money be saved, but companies will be forced to create a higher quality product at a more realistic price.

Pedagogical Dimensions Summary of McGraw-Hill's Passkey Software as evaluated by Jeff Young

Dimension	Left		Right
Epistemology	*Objectivism*	← **Pk** ——————————→	*Constructivism*
Pedagogical Philosophy	*Instructivist*	← —————**Pk**—————→	*Constructivist*
Underlying Psychology	*Behavioral*	← ————**Pk**————→	*Cognitive*
Goal Orientation	*Sharply-focused*	← **Pk** ——————————→	*Unfocused*
Experiential Validity	*Abstract*	← ————**Pk**————→	*Concrete*
Teacher Role	*Didactic*	← ——————**Pk**——————→	*Facilitative*
Flexibility	*Teacher-Proof*	←**Pk** ——————————→	*Easily Modifiable*
Value of Errors	*Errorless Learning*	← ————**Pk**————→	*Experience Learning*
Origin of Motivation	*Extrinsic*	← ————**Pk**————→	*Intrinsic*
Accommodation of Individual Differences	*Non-existent*	← ———**Pk**————→	*Multi-faceted*
Learner Control	*Non-existent*	← ——**Pk**—————→	*Unrestricted*
User Activity	*Mathemagenic*	← —**Pk**——————→	*Generative*
Cooperative Learning	*Unsupported*	←**Pk** ——————————→	*Integral*
Cultural Sensitivity	*Non-existent*	← **Pk** ——————————→	*Integral*