Using Human Performance Technology (HPT) to Identify Potential Barriers to Online High School Course Development

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Executive Summary

A suburban high school district in Arizona was recently named as a provider of Technology Assisted Project Based Instruction (TAPBI). The district's challenge was to create 20 effective, online high school courses in approximately nine months. Successful deployment depended in large measure on the ability of the teachers of those courses to effectively design and develop the instructional content. Therefore, the district had to train, prepare, and support the teachers in their work.

To help identify factors that might prevent teachers from meeting the challenge, a team of students from Arizona State University worked closely with the district during a two-month period as the TAPBI program began. This paper documents the data collection methods employed, findings, and subsequent recommendations for attaining success.

Project Purpose

The purpose of the project was to assist the district in identifying potential barriers to effective design and development of 20 online high school courses. The district had been named a provider of Technology Assisted Project Based Instruction (TAPBI), which required it to provide a "variety of educational methodologies employed by the school and the means of addressing the unique needs and learning styles of targeted pupil populations including computer assisted learning systems, virtual classrooms, virtual laboratories, electronic field trips, electronic mail, virtual tutoring, on-line help desk, group chat sessions and non-computer based activities performed under the direction of a certificated teacher." The district wanted to identify strategies leading to optimal implementation of the program.

Data Collection Methods

Data collection for the project employed four methods: analysis of a survey administered by the district to teachers, follow-up interviews with teachers who were interested in the project and who had completed the survey, observation of an informational meeting for interested teachers, and a review of relevant literature.

Survey

The district developed a survey instrument to be administered online to the teachers throughout the district. The instrument introduced the TAPBI program to the teachers and asked for responses from those who had an interest in participating as designers and developers of online courses. The items used for data collection focused primarily on the teachers' skill and experience in online environments. The district provided the project team with the data obtained from survey responses.

Interviews

Based on the survey responses, the project team divided teachers into three categories according to their skill and experience designing and delivering instruction in online environments. The project team then contacted each teacher via email in an effort to arrange a follow-up interview. The purpose of the interview was to understand teachers' perceptions of the TAPBI program, and to gauge their expectations regarding potential barriers to effective implementation. Select administrators were also contacted for similar reasons.

Informational Meeting

The project team attended an informational meeting held for teachers interested in participating in the program. Team members who attended the meeting were able to listen to teachers' questions and identify some

of their concerns regarding the program.

Literature Review

We anticipated that our task of identifying potential barriers to effective design and development could be aided by drawing upon the experiences of other organizations that had implemented similar programs and had published their experience in the literature. Therefore, we searched through relevant journals for cases in which organizations had implemented a program similar to TAPBI, and identified barriers to effective implementation.

Findings

Analysis of the data led to several findings with potential implications for action on the part of the district. Based on these findings, we generated recommendations for how to prevent performance barriers to the TAPBI program.

There are a wide variety of potential barriers to an effective rollout of the program. These barriers can be categorized into three general groups: Administrative / Strategic; Experience / Knowledge; and Motivational / Incentive. Our discussions with individual teachers revealed that they had several fears about their participation in the program, and that many lack experience as online teachers and designers. Our communication with administrators brought to light that the district is already grappling with issues such as marketing, teacher contracts, and copyright. The long-term success of the program rests on effectively dealing with many of these issues.

Teachers and administrators view lack of time as a potential barrier. Devising strategies to lessen encroachment of program responsibilities on the teachers' pre-existing classroom responsibilities should be a priority.

Many of the teachers lack critical experience and knowledge about designing online instructional content. This relates to using WebCT and supporting multimedia technology. The gap that exists between many teachers' knowledge of the technology necessary for development and the knowledge needed to effectively develop their courses must be bridged for the program to be successful. However, we felt that the teachers had a good understanding of how their online courses would differ, pedagogically, from their classroom courses.

Teachers expect and welcome peer review of their course designs. This strategy that the district is planning to implement can be a very effective method of ensuring sound pedagogical design, and standardization of technology, content, and designs. Enthusiasm for peer review, though, could become fragile, and could easily shatter if the reviews are not done constructively and meaningfully.

Implications and Recommendations

The implications for an optimal rollout of the TAPBI program depend on three key factors: time, training, and support.

Time

This is the most crucial factor for developing the TAPBI program. Although most teachers said they could complete their course by the deadline, time was the top concern for both teachers and administrators. At the time of this report, the courses to be developed had just been selected, but not yet approved for funding by the District Governing Board.

Training

The data clearly demonstrate that the teachers are experts in their content area, but they want multimedia/online course training. This is supported by the initial survey in which over half of the respondents indicated they had not developed course components for students using the online WebCT environment. Most feel that they need some kind of multimedia/online course training so they can develop classes that are going to meet the needs of their virtual students. Literature reviews also recognized that courses with text-heavy content are insufficient to retain student interest, and can lead to high attrition rates.

Support

The teachers must feel that this project is going to be supported by the district with IT resources, funding, and management. In addition, some instructors have been involved with similar programs that have never been brought to fruition, and they fear a lack of support could undermine their work developing the online

courses for the TAPBI program.

The following interventions are recommended for the TAPBI program rollout effort and to minimize potential barriers for optimal success.

Vision and Strategies Structure

Document the vision and strategy of the TAPBI program as it applies to the district to instill confidence in the teachers. This should include buy-in from the District Governing Board and pledged IT support for the program. A statement documenting the District's vision and strategies should be included in the development packet given to the teachers when they are selected to develop a course as proof of commitment to the program.

Multi-year Strategic Plan

Develop a schedule to keep course development on track, including a timetable of deadlines for each step in the process. This lets the teachers know what they are expected to have completed by when, and alerts the district to those teachers who may be having difficulties and are falling behind. This strategic plan also allows the district to see a problem as it arises and intervene in time to correct it.

Mentoring Program/Peer Coaching

Set up development groups with an experienced teacher as a mentor to help those with less experience. Provide time for them to meet in person to demonstrate "hands-on" procedures. Provide a Discussion Board for peer coaching and communication with administrators. Mentors should provide examples of both effective and less-effective online course designs as examples to the less-experienced teachers.

WebCT and/or Multimedia Training

Arrange for expert trainers to come to campus for "hands-on" training. Select one individual from each campus as a liaison between the teachers and trainers to stay current with software programs and techniques. The liaison will then share information at mentor meetings or through the Discussion Board. Again, training should provide both effective and less-effective examples of online design for the teachers to reference.

Feedback/Appraisal System

Schedule course material reviews at logical intervals (steps) throughout the development process as shown in the Strategic Plan. This should be an ongoing formative evaluation. By waiting until course completion for the jury review, it may be too late to meet the required deadline if course correction is required.

Table 1 *Results of Interviews with Teachers and Administrators*

1. What do you see as likely problems for you in the development of your online courses? (Arrange in the order of importance with 1 being the most important and 7 being the least important.)

	Teacher Mean	Administrator Mean
Lack of time	1.50	1.00
Lack of multimedia skills	3.50	4.00
Lack of District support	3.50	5.00
Lack of IT support.	3.67	5.00
Lack of instructional design skills	3.83	2.50
Lack of motivation after start of project	5.17	3.50
Lack of content expertise	6.83	7.00

2. What do you feel is important to know before you begin creating your online course? (Arrange in the order of importance with 1 being the most important and 6 being the least important.)

	Teacher Mean	Administrator Mean
Experience teaching a course online	2.83	4.50
Subject matter	3.00	1.00
Instructional design	3.33	2.50
Multimedia programs	3.50	4.50
Experience taking a course online	4.17	3.00
More about computer technology	4.67	5.50

3. What are your biggest fears in developing an online course? (Arrange in order with 1 being the biggest fear and 6 being the smallest or least fear.)

	Teacher Mean	Administrator Mean
Time	1.67	2.00
Multimedia skills	2.50	3.00
IT support	3.67	4.00
Computer skills	4.00	2.00
Submitting the course to the jury	4.17	4.50
Beta-testing the course	5.00	5.00

4. What support/help will the District need to provide as you design and develop your course?

	# of Teacher Responses
Training/Workshop on WebCT	3
Real-time Technology Support	3
Training/Equipment on Multimedia Content	1
Documentation/Training Manual for WebCT (List of tips)	1
Reviewer of Course Material	1

5. How will your online course be designed differently than your classroom course?

	# of Teacher Responses
Online Quizzes	1
Multimedia Items (Audio and Visual)	2
Discussion Forums	1
Online Resources (Materials)	2
Student Centered Format	1
Independent Research	2
Critical Thinking	1
Reworking the content for assessment and motivational factors	1
Drill and Practice and Feedback on Quizzes	1

6. What sort of evaluation procedures will you be following (if any) during the design and development of your course?

Evaluation by Peers	3
Field Test (Beta test)	3

7. Are you aware of any standards that need to be met in the design and development of these courses?

AIMS Standards	1
ISTE Standards	1
Local, State and National Standards	4
Self developed standards from online chats	1
Standards given by Project Coordinator	1
Good Instructional Design Principles	1
IT Standards	1

8. What resources has the school has given you for this project?

Textbooks	1
Question banks	1
Teacher editions	1
Computer resources	2
Active Discussion Board	1
WebCT LMS and Tutorial Access	1

9. What resources would help you?

Training on WebCT	2
Training on IT (Integration of Technology)	1
Internet Access	1
Enough computers to beta test	1
CD Burner	1
Making Video Excerpts Available Online	1

10. What was your primary motivation in getting involved in this project?

Curiosity	1
Use of technology	2
Wish to become an online teacher later	2
Money	1
Helps Gifted Children and in home schooling	1

11. What do you perceive as being the biggest obstacle for this project?

Time involved in uploading the materials	6
Lack of knowledge of WebCT	4
Funding problems	1
Tech Support	2
Loosing face to face contact	1
Security issues online (students could cheat)	1
Training	2
Resources	1
Lack of Coordination	1
Skills	1

12. Do you think that converting your classroom-based course to an online course will have the same effects on learning?

Depends on the student (Discipline, Motivation, personality types)	3
Online courses are positive move forward in the educational system	1
Depends on the Challenge to overcome the lack of face-to-face contact	1
More successful for motivated students	1

13. Would you be comfortable teaching an online course developed by someone else or would you let someone else teach the course you developed?

Will let teach others courses	1
Prefer to teach my own course	3
Willing to let someone else teach my course	2
Will redesign and teach somebody else course	3

14. If you have developed online course before, what do you know now that you wished you could have known then?

Make lesson very explicit and complete	1
Provide feedback and positive reinforcement	1
More contact with students in an online setting	1
Be ready to handle technology issues	1
Course design takes more time than anticipated	1
The course design process	1
Teaching and learning in an online environment	1
School/districts expectations	1

15. To what extent do you perceive this initiative to be of value to you and to the school where you teach?

Will help the district to lead in cutting edge opportunities/efforts	1
School will be in forefront of this educational endeavor	1
Might end up re-inventing the wheel	1
Good challenge as we are moving into technology centered world	1
Great opportunity for personal growth	1
Good opportunity for students to be successful	1
Classes taught on one campus can be available for all the students	1