

# Using Technology to Improve Instructional Planning

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**Abstract.** Lesson planning is considered a critical but complex task to attain effective instruction. The traditional paper-based approach was found to be cumbersome and consequently detrimental in the willingness and effectiveness of teachers' lesson planning. A Web-based lesson planning system combining instructional planning and calendaring functions to support Missouri's education reforms was in the process of development and testing. Early usability tests proved the system to be positive in helping Missouri teachers plan their instruction. Some design issues were identified.

## Introduction

The success of Missouri's education reforms, to improve student performance as measured by the Missouri Assessment Program (MAP), will require new and different teaching and learning strategies that align curriculum and state standards using inquiry-based instructional strategies and infusing instructional technologies. Successful teaching and learning does not occur by chance. It relies on careful planning of instruction. Since lesson planning is considered to be critical to the success or failure of teaching and student learning, it is vital that teachers are competent in planning daily lessons that support Missouri's education reforms.

Lesson planning is an essential but complex task (Borko & Livingston, 1989; Doyle & Holm, 1998; Johnson, 2000; Ornstein, 1997). Various theoretical models were developed to help teachers plan lessons (Eisner, 1967; MacDonald, 1965; Tyler, 1950; Yinger, 1980). While numerous studies exist to discuss lesson planning and its effects, the research on the effect of technology-based lesson planning systems is conspicuously lacking.

The use of technology to support lesson planning is not new. Several systems such as Computer-Prompted Instructional Planning System and Lesson Plan Maker appeared shortly after personal computers gained acceptance in early 1980s. Several studies have showed the positive effect of using personal computers to support lesson planning. Today, the advancement and prevalence of technology in schools makes it a very viable option for teachers to utilize in planning, sharing, and communicating instructional information. In particular, the Web allows teachers to create and access instructional plans without time and space boundaries. However, a search revealed that a Web-based lesson planning system combining instructional planning and calendaring functions to support Missouri's education reforms does not exist.

## Issues

While Missouri has undertaken a State initiative to support Missouri teachers as they integrate multimedia technology into inquiry-based, student-centered instructional practices (<http://emints.more.net>), most teachers are still using pencil and paper to do lesson planning. Major drawbacks of this paper-based lesson planning include:

- The process is very labor-intensive and cognitively arduous. The task becomes perfunctory to many teachers. They feel obligated to write out lesson plans only because it is required by the administration.
- There are no systematic prompts or built-in links to information that can guide the teachers' lesson planning to focus on Missouri's education reforms.
- Lesson plans are not accessible to colleagues or school administrators unless special requests are made. Consequently, sharing instructional information among teachers is difficult.
- Parents have no access to lesson plans and, as a result, must rely on other methods to know what their children are learning on a daily basis.
- It is difficult to modify the contents of lesson plans once they are written on paper.
- Paper is not very durable and thus, valuable instructional information can be easily damaged.

## Implementation and Preliminary Results

To help resolve these issues in lesson planning, a Web-based lesson planning system is under development with “teacher friendly” tools. The objectives of the system are threefold. First, it streamlines the lesson planning process to align with curriculum and Missouri standards and provides guidance with checklist functions to help teachers focus on addressing Missouri's education reforms. Second, it preserves valuable lesson plans developed by teachers for dissemination and facilitates the sharing of lesson planning knowledge and skills among teachers. Third, it promotes better lesson planning results through sharing and collaboration and enhances communication between parents and schools, thus increasing parental involvement in their children's education.

This Web-based lesson planning system is a work in progress; consequently, only formative evaluation is available. To date, a preliminary working system developed in Lotus Domino has gone through several rounds of prototyping and usability testing to collect user feedback. Early indicators suggest the system will be particularly helpful in the areas of:

- searching and adapting existing lesson plans for other uses,
  - communicating instructional plans with other teachers and students, and
  - developing lesson plans to meet Missouri academic standards.
- User feedback also reveals several issues that need to be resolved before the objectives of the system can be fully realized. Among them, the following two are most critical:
- The system has to be flexible to accommodate different instructional needs and processes of schools and teachers.
  - Other non-technical arrangements such as training and support have to be in place to motivate teachers to use the system and to share their instructional plans.

## Conclusion and future research

Preparing teachers for technology integration in their instruction and enhancing teachers' instructional quality are two important endeavors to advance K-12 education reforms. This initial phase of this project is to develop, implement, and pilot test the lesson planning functions. Later phases will include additional functions to support communication with parents via the Web and to scale-up the lesson planning model for statewide access and use, and to disseminate to a national audience. From a research perspective, this project will lead to a better understanding of:

1. How teachers plan instruction using technology?
2. How teachers share instructional information through technology, how technology can assist with instructional planning?
3. How the Web can serve as a communication means between parents and schools?

The on-going process of building the lesson planning system and preserving instructional plans in a sharable library enables teachers to better plan their instruction and share their instructional materials. As the system matures and the content grows, it will have the potential of improving instructional planning process and products of Missouri teachers and thereby advancing the entire K-12 education enterprise at Missouri.

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