Title:

Technology Use to support teaching and learning in Learner-Centered Schools

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Short description: (75 words)

This paper report findings from surveying teachers in forty-one K-12 learner-centered schools regarding their technology use. The results show how technology was widely used (1) to support four major functions: record-keeping, planning for instruction, during instruction, and assessment, and (2) to support key elements of learner-centered education: attainment-based student progress, personalized learning, criterion-referenced assessment, and PBL. The technology systems in use were also listed and discussed.

Abstract: (750-1000 words)

Introduction

As our society moves from the industrial age to the information-age with technology's rapid development, computer technology plays important roles to transform the current education system into a learner-centered paradigm. Reigeluth and his team (2008) proposed four major roles for information-age technology: record-keeping for student learning, planning for student learning, instruction for student learning, and assessment for (and of) student learning. This conference presentation aims to contribute to the current literature by addressing how technology was used in the K-12

learner-centered schools in the U.S. The following three major questions guided investigation:

1. How technology was used in the learner-centered schools for the following functions?
    a. Record keeping
    b. Planning
    c. Instruction
    d. Assessment
2. How technology was used to support the following key elements of learner-centered paradigm of education?
    a. Attainment-based student progress
    b. Personalized learning
    c. Criterion-referenced assessment
    d. Collaborative PBL
3. What technology systems were used in these learner-centered schools to support instruction and learning?

Methods

Our research team initially identified 330 learner-centered schools from various sources, including published reports, national school models, and the States' Department of Education websites. Teachers from these learner-centered schools were invited to participate in the study. The survey instruments were developed by the team, reviewed by experts, and pilot tested. This paper focused on the survey's technology section, which included questions about computer technology use for the four major

functions: teachers' use for record-keeping (4 items), teachers' use for planning for learning (7 items), students' use during instruction (6 items), and teachers' use for assessment (7 items). For each item, participants were asked to base responses on the previous year, 2011-2012 and choose one of the three options: "Yes" "No, but I wish I had it" or "No, and I don't want it." The survey also asked participants to list the major technology systems they used and what functions each system supported. A total number of 430 teachers and administrators from 41 schools (response rate: 12%) responded to the online survey and 222 teachers completed the technology section.

Findings. Note that due to the paper length constraint, this paper only included key findings from each research questions and the complete findings will be presented at the conference.

First, computer technology was widely used to support learner-centered schools in the four major functions. The results also addressed features that need to be developed to better support learning and instruction. Some results included: a. Recording keeping: skills or competencies mastered (Yes: 79%, No, but I wish I had it:19%), interests (Yes: 36%, Wish: 46%). b. Planning for learning: timelines for learning activities (Yes: 64%, Wish: 25%), resources for student learning (Yes: 81%, Wish: 16%). c. Students' use during Instruction: computer-based instruction (Yes: 76%, Wish: 17%), exploring or finding resources (Yes: 89%, Wish: 9%) d. Assessment: adjusting levels of difficulty to the student automatically (Yes: 35%, Wish: 53%), receiving statistics about test results for improving instruction or test items (Yes: 50%, Wish: 41%), and providing students feedback (Yes: 59%, Wish: 39%).

Second, the teacher responses were also analyzed to capture how technology use supported or could have supported learner-centered paradigm especially in the four key elements. Some results included a. Attainment-based student progress: recording skills/ competencies mastered (Yes: 79%, Wish: 19%), testing on demand: students take a test when they are ready (Yes: 37%, Wish: 44%). b. Personalized learning: recording characteristics (Yes: 34%, Wish: 55%), testing different content to accommodate different student goals (Yes: 53%, Wish: 38%). c. Criterion-referenced assessment: certifying attainments (Yes: 51%, Wish: 40%). d. PBL: project selection: (Yes: 61%, Wish: 28%), creating artifacts in class (Yes: 83%, Wish: 16%)

Third, participants listed 93 technology systems in total as the systems their schools used, and indicated the major functions that each technology system supported. To present the findings, the technology systems were categorized in groups, and some were listed here: 1) LMS: Infinite Campus, Educate, Global Scholar, Blackboard, Moodle; 2) LMS with curriculum: e-2020, ALEKS, APEX, Study Island; 3) PBL: Project Foundry; 4) Student Information system: Power School; and 5) Web 2.0 tools: Google drive, wikis, and Edmodo. The top three most-mentioned systems were: Infinite Campus (49 times), Educate (37 times), Project Foundry (21 times). During conference presentation, more detail on technology systems will be discussed.

Conclusion and Discussion

This paper present evidence of current technology use in learner-centered schools. The results found that technology has played a crucial role in the four major functions and in supporting the key elements of learner-centered education. The

findings also addressed several areas to be developed in current technology systems. For instance, to meet needs for attainment-based learning and personalized learning, teachers desired advanced assessment features, including testing on demand, testing different content, adjusting difficulty automatically, and integrating tests as practice within the instruction. Future research will continue the analysis of the relationship between technology use and schools' learner-centered practice.