Digital teaching platform

Digital teaching platforms refers to a general concept that broadly covers the ongoing development of digital learning environments and how these environments can be used effectively.[1]

The **digital teaching platform** is also a new educational series of products designed to operate in a teacher-led classroom by the company Time To Know, Inc.[2] It offers a new tech-centric approach to the learning process and classroom planning.[3] The platform is designed to function as the instructional environment in today's technology-intensive classrooms. It provides a full digital curriculum, and supports the teacher with tools for curriculum planning, classroom management, and student assessment.[4]

1 Characteristics

The product "digital teaching platform" is designed for 21st century K–12 classrooms. Its approach contrasts with ideas and techniques used in the 1950s to prepare students for careers in factory-like atmospheres. It is a web-based system that puts the teacher in charge of the lesson, and is designed to provide the tools and resources the teacher needs to ensure smooth operation of the class. The platform functions as the primary instructional environment in a classroom with a 1:1 student-computer ratio. According to the One-to-One Institute, "One-to-one learning provides every student and teacher access to his or her own personal portable technology in a wireless environment allowing students to learn at their own pace and ability levels."[5]

Unlike supplemental software programs, the digital teaching platform is the primary carrier of core curriculum content. It includes a comprehensive digital curriculum, which the teacher and students can access from their own computers. It also includes tools that allow the teacher to easily plan lessons, assign instruction, manage the classroom, and assess student learning — all from his or her computer.

2 Classroom uses

According to Walters and Dede the technology-rich digital teaching platform uses a one-to-one computing environment to best advantage.[2] The platform enables highly differentiated learning instruction, and supports collaborative learning and interdisciplinary techniques.[6] It facilitates large group multimedia presentations, small group projects, and individualized practice and assessment. The teacher is fully in control of student activities by making assignments, mentoring individuals, leading discussions, and providing feedback.[7]

Before class, the teacher uses planning tools provided on the system to prepare the lesson. During class, the teacher uses multimedia to introduce a topic. Using their computers, students then access applets to explore concepts, and practice exercises.[8] After class – at school or home – the teacher can use her computer to review each student's progress and trends in class performance, and begin the process for planning tomorrow's lessons. Teachers can also use the platform to customize learning sequences, assign assessments to students,[9] and create reports of student progress. Each student uses a laptop during the class[10] which allows not only for individual participation, but teachers are also able to monitor individual student progress throughout the class.[11]

With a digital teaching platform, students see only the activities they are assigned, so they are not distracted by materials meant for others or by activities that will be used later. The platform ensures that students understand their assignments and can move quickly from one activity to the next without losing time or momentum.

3 Research into the impact of digital teaching platforms

Independent studies in the United States and Israel show students who use a digital teaching platform achieve higher gains in language arts and mathematics than students in comparable schools using traditional teaching methods and curriculum. The digital teaching platform classrooms also show improved teaching quality, an improved learning environment with fewer disruptions, and an increase in student confidence, motivation and enjoyment of math and reading/language arts.[7]

A 2009 study by the Henrietta Szold Institute, the National Institute for Research in the Behavioral Sciences in Jerusalem, examined the educational impact of a specific digital teaching platform, called Time To Know, on students in two public elementary schools in Israel. One was an inner city school with many students from low-income households or state-run group homes, and the other was located in an upper-middle-class neighborhood.

The study also included two comparison schools with similar demographics and achievement levels. Students in the treatment and comparison schools took a pretest at the beginning of the 2008-09 school year and took the same test as a post-test at the end of the year. Fifth grade students who had used this teaching platform for two years showed higher gains in their test scores in all three subject areas — Hebrew, English, and mathematics — than fifth grade students in the comparison schools. The gains in reading language arts were particularly significant. In schools using the digital teaching platform, students achieved average gains of 21.7 points in reading language arts in English. In contrast, students in the comparison schools achieved gains of 10.3 points in the same subjects.[12]

Results are similar in the United States. The Grand Prairie Independent School District (ISD) in Texas implemented a digital teaching platform in two classes each at Austin Elementary and Whitt Elementary schools during the 2009-10 school year. On the 2010 Texas Assessment of Knowledge and Skills (TAKS), students in classes using the digital teaching platforms achieved statistically significant gains in mathematics, reading and writing, and outscored students in control classrooms in the district. A greater proportion of these students also reached the "Met The Standard" and "Commended" performance levels on the TAKS. In mathematics, 93 percent of these students reached these levels and achieved proficiency on the TAKS, compared to 66 percent of the control students. In reading, 90 percent of these students achieved proficiency, compared to 69 percent of the control students. In writing, 98 percent of these students achieved proficiency, compared to 92 percent of the control students. In addition, these students significantly increased their TAKS scores in mathematics and reading from the third grade in 2009 to the fourth grade in 2010.[13]

The TAKS results follow the results of an independent evaluation by Rockman et al., an independent research and evaluation firm based in San Francisco that was conducted in Grand Prairie ISD in early 2010.[13] The study showed that the Time To Know students far outperformed the control students in 21st century skills such as math reasoning abilities. Students in the digital teaching platform classes also spent more time using authentic tasks and problems, and more time explaining their reasoning. Further, the lower performing students made the greatest gains with the digital teaching platform, narrowing the achievement gap in math.[13]

4   Digital teaching platforms

The first company to develop and implement a digital teaching platform in schools in Israel and the United States was Time To Know, Inc. which was founded in 2004.[14] According to J. Schenker from Informilo, Time To Know uses a "Web-based infrastructure software, which serves as a digital teaching platform. The software functions as an operating system for teaching, learning and assessment in the classroom. Its uniqueness is that it is based on core curriculum subjects such as math, language arts (reading, writing and comprehension) as well as English as a second or foreign language. It supports a lot of real-time functions, allowing teachers to get immediate feedback on which students in the classroom get it and which don't." [15] This digital teaching platform delivers standards-based instruction in mathematics and reading/language arts to help elementary school students learn essential content and prepare for high-stakes tests.[16] Built upon social constructivist principles, the interactive curriculum also offers open-ended explorations and collaboration tools to deepen student understanding, increase motivation, and strengthen problem-solving skills. It is reported that digital teaching platforms provide teachers time-saving tools to streamline classroom management, create a smooth flow between group and individual instruction, and deliver differentiated learning activities to every learner.[17]

New York City's School of One middle school mathematics program uses its own digital teaching platform to develop personalized learning plans for students, to monitor the students' progress, and adjust the plans accordingly.

In the Indian state of Haryana, District Sirsa's district planning committee has decided to use digital class platform to educate 71 government run schools.[18]

5   Pedagogical theory

Digital teaching platforms are based on a social constructivist theory. Curricula built on social constructivist principles must develop conceptual understandings together with fluency and problem-solving skills in a manner that makes these attributes mutually supportive.[19] The medium of digitized learning platforms allows for academic discourse to be viewed as a space where competing beliefs and practices intersect and confront one another.[20]

In the constructivist approach, instruction is a process that supports knowledge construction rather than communicating that knowledge. The teacher serves as a guide within a particular discourse community, rather than as the expert who transfers knowledge to students under the facade of universality.[20][21] Learning activities are authentic and leverage the learners' puzzlement and curiosity that arises when their faulty or incomplete knowledge fails to predict what they observe. Teachers encourage students to reflect on these experiences, to seek alternative viewpoints, and to test a variety of ideas rather than adopt hegemonic principles. Student motivation to achieve these goals is determined by factors such as challenge, curiosity, choice, fantasy, and social recognition.[22] These goals produce a critical technolog-

ical literacy that will make the student aware of the social, economic, and pedagogical implications of new communication technologies.[23]

The National Research Council lists the essential goals of learning in a constructivist approach:

- Building a deep foundation of factual knowledge and procedural skills;

- Developing conceptual frameworks;

- Organizing domain knowledge as experts do;

- Improving the thinking processes.[24]

Student motivation to achieve these goals is determined by a variety of intrinsic and extrinsic factors, such as satisfaction from achievement, contributing to others, and challenge and curiosity.[22]

6   Online Writing Centers

Online learning is often thought of as a binary opposition to live instruction. Digital platforms are criticized for being disembodied or for preventing dialogue. Because writing curriculum emphasizes process and discussion, digital teaching platforms are considered anathema to teaching writing.

In contrast, the presence and success of OWL's or Online Writing Labs in higher education has privileged student writing with the very features that inspire the criticism of it. OWL's provide multiple formats for dialogue including discussion boards, video conferencing, track changes, and shared spaces. Each of these tools offers a new and convenient possibility to support a stage of the writing process. OWLs coordinate people, platforms, and writing techniques to support student writing. Where tutoring was once a luxury for students with greater resources, OWL's level the playing field by making this service available to all students.

The planning and organization of the digital platform translates to clear and organized curriculum and instruction. Gee associates optimal learning with a language delivery system that is just in time and on demand. In the instance of digital media students can interface with this language as participants and not simply spectators.[25] Hall hails tutoring methods, rather than method of delivery, as crucial to successful tutoring. The tutor's task of understanding the student's understanding of an assignment is crucial. Blog discussions support tutors in shuttling from single-loop and double loop process with aplomb. Online tutors benefit from blogging their tutorial reflection with each other to share information and insight.[26] With the intervention of a well developed OWL, students benefit from the variability of small to large audiences for their writing within and outside of the discourse community.

Online tutoring benefits from the intervention of training programs for all participants. Training in new technologies, such as video conferencing, coordinate the members of a writing center from administrators, teachers, graduate students, and technical support.[27] Networking people promotes collective intelligence and serves a secondary purpose of exposing students to the social geography of a university. Taken in a Vygotskyian frame, tutors, teachers and administrators model the dominant discourse via multiple platforms and with greater transparency.

The Purdue Writing center opened in 1994 and with an asynchronous communication model of email and website. Although an improvement at the time, email reinforces the limits of the student teacher model rather than expanding dialogue. With updated technologies, such as video conferencing, discussion boards, and Wikipedia storming, digital learning platforms expand the number of opportunities for writing intervention by providing structured dialogue and an expanded audience. The heavy lifting of working with an individual on writing challenges no longer rests exclusively on the teacher. Much analysis of OWLs conflates data from old asynchronous models to more current platforms, which misrepresents the effectiveness of this method. Further, according to Gee, digital age experts are rarely accurate in predicting outcomes. Education in a digital age needs to undergo a saber metrics revolution where readings of more current and essential information are considered in policy making.[25]

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