Enhanced Instructional Presentations and Field-Webs

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INTRODUCTION

Learning from Linear Presentations

The development and growth of the Internet has revolutionized not only the way we access information, but the way we present it as well. Prior to the advent of the World Wide Web, most learning presentations were audio, textual, or video publications that were viewed linearly, or planned learning activities that were presented in a linear fashion. The learner may have listened to a lecture, completed a sequence of activities, read a chapter in a textbook, followed along on a tour, or watched a film or video to gain the information needed to learn a new concept – and opportunities to adjust the presentation sequence were limited.

Linear presentations (lectures, expositions, demonstrations, activity sequences, etc.) can be seen as efficient from the perspective of the instructor and the institution. They aim to maximize the overall learning effects for a target audience by identifying the state of understanding and needs of the average learner, and then creating and reusing a fixed presentation to meet those typical needs. These presentations are often well polished and can be effective for large portions of their target audiences.

However, this model seems to be inefficient for many learners and completely unhelpful for others. Because the intended audience is an amalgamation of learners, any given presentation can fail to meet student needs on several fronts: for some, the content presented may be redundant, while for others the examples presented may be insufficient or inscrutable; for some the information may be presented too quickly, while for others the pace may be too slow; for some, the presentation style and language may be easy to take in, while for others, the presentation may require excessive effort to apprehend ideas and remain engaged.

These issues may be somewhat mitigated in a live classroom presentation, where a learner can have an opportunity to ask clarifying questions to address some of their learning needs. Unfortunately, these opportunities are often limited because the teacher feels a pressure to get through the material for the day. Similarly, when students are in a learning setting outside the regular classroom, such as on a tour, questions might be asked – if the learner has sufficient language skills, background knowledge and confidence to pose a question – but often the schedule is tight, and the opportunities for questions (and student led learning) are limited. Finally, when viewing a video, there might be an option to pause and review, but social constraints limit interference with the traditional linear presentation – and as a result learners tend to become passive or adopt a "learned helplessness" (Flanagan, 1996).

We expect that this "learned helplessness", or passivity, occurs to some degree in most linear presentations because learners have experienced the futility associated with trying to synchronously process all of the content, reconcile every contradiction or explore all the perplexities arising from the presentation. If they allow themselves to be distracted by any portion of the content, their inattention to the new content and structures being presented will likely lead to greater confusion overall. To cope with an unregulated onslaught of new information, the learners will be conditioned to become passive receptors of content whenever the pace of information exceeds their ability to cope. This passivity, in turn, may retard the learning process (Schunk, 2000).

That linear presentations are often partially effective for the majority of the target population is a testament to the resiliency and capacity of the human mind. Learners may store up the presented content (information and experiences) for later reflection and learning. Yet, we suggest that this is an inefficient process (when compared to interactive learning opportunities) with uneven results that depend upon the individual learner's capacity for storing and recalling presented content and their access to additional resources (supplementary experiences, books, experts, tutors, etc).

BACKGROUND

The World Wide Web has provided learners today with a new avenue to address their learning needs. Knowledge is now readily accessible through a myriad of websites that provide not only access to needed content, but also provide learner control in terms of amount of information and order of access. This Just-In-Time model supports collaboration, authentic learning, curiosity, and opportunities to reflect and grow (Jacobsen, Clifford, & Friesen, 2002). However, because of the explosive growth of the Internet, learners often face information overload and information anxiety (Carlson, 2003). Pre-filtering and sorting of perceived information requirements to reduce the amount of information options offered and to enhance the quality of the material acquired can help reduce stress and cognitive overload.

The Enhanced Instructional Presentation (EIP) model is a transformation model that seeks to meld the benefits of learner control and self-directed learning, with the strengths of well-crafted linear presentations. The model guides the transformation of existing (or newly captured) linear content into hypermedia based EIPs that include adjustable learner control with respect to their review or passage through the original presentation, access to refined networks of authentic learner questions and supplementary support material, and access to dynamic and evolving resources, activities and challenges to support learning and problem solving. The resulting EIPs allow the individual learners to view, review and process content at a rate and in an order that meets the learners' needs (accretion), while providing them with opportunities to "ask questions", reconcile contradictions (restructure), and reflect and improve upon their understanding (fine-tuning) (Ru-

melhart, 1978). The EIP model is an adaptation of van Merrienboer's 4C/ID model (van Merrienboer, 1997) to support the delinearization of traditional linear presentations.

Questioning, Constructing and Tutoring

Aristotle suggested that our learning is composed of question answer propositions and Dillon claimed: "No event better portends learning than a question arising to the mind" (1986, p. 333). Yet student generated questions are typically scarce in the industrial model of education.

Constructivism is based on the idea that knowledge is accrued through an adaptive function (von Glaserfeld, 1991) and asserts that learning results from actively adapting to the environment rather than through passive reception of information or instruction (Mariotti, 2002). Furthermore, constructivism recognizes that individuals have different backgrounds and understandings, and will have widely varying needs for supplementary explanations and examples (Bruner, 1966). Ultimately, an ideal learning environment supports the asking of questions and the seeking of answers.

While there may be some valid teaching efficiency arguments supporting the more traditional model of presenting synthesized and sequenced content augmented with responses to selected anticipated questions, the efficiencies accrue primarily to the system and teacher. Such a system cannot be expected to be efficient from the perspective of the student.

When a learner is presented with a traditional fixed linear presentation (live or recorded, with or without an in-line or follow-up discussion in class), a loss of learning opportunities or a reduction in learning efficiency may be expected to result. Even when the learners do not slip into a mode of learned helplessness, challenges arise that reduce their engagement with the presentation or lesson and negatively affect the potential for learning. These frustrations include:

1. Presentation rates that are either too fast or too slow for individual learners may cause selective attention or inattention to presentation content.
2. Short term memory overloads or processing delays may cause concepts, context, questions and even answers to be dropped before they can be committed to memory (Miller, 1956) or shared during a delayed discussion.

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