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Problem Solving Coaching = Online Pinging: How to Make Coaching Both Effective and Efficient and Some Additional Individual Learning Advantages

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The purpose of this short paper is to introduce a potentially new technology that can impact the professional development field as well as learning in general. It is presented for its heuristic value to get us thinking about the possibilities of this new technology as a new online delivery system.

We know that problem solving coaching is an effective quality improvement/professional development intervention (Training, Technical Assistance, and Quality Rating and Improvement Systems) but one that is not particularly efficient. It is very time intensive which drives up cost but it is so much more effective than run of the mill professional development interventions that revolve around workshop or lecture type delivery. (***Mathematical Policy Research (2011) has completed a comprehensive review of coaching and its impacts***). Many states want to use coaching throughout their technical assistance and quality improvement initiatives but it is not sustainable.

In order to deal with these problems of efficiency, a new technology called "Pinging" has been devised where training/professional development segments can be sent directly to a cell phone/tablet/computer based upon learning algorithms and where no face-to-face interaction is necessary. Everything occurs online with "pings" tied to an assessment of knowledge and/or behaviors that may be lacking which are then reinforced to become more positive. This is a new approach to coaching which is being monitored and evaluated as part of an NIH R01 grant (***iLookOut Child Abuse Prevention Training Program, B. Levi, PI***) to determine its efficacy, effectiveness, and efficiency.

Going beyond the professional development field there are some direct applications to learning and instruction in general. For example, could pinging be used as a means to individualize instruction and learning to help solve McVicker-Hunt's "Problem of the Match" or to address Vygotsky's "Zone of Proximal Development" via a skilled tutor? Could pinging be used as an individualized text for a learner in which based upon an assessment, only content relevant to the learner's strengths and weaknesses are presented to the learner's electronic device (laptop computer, tablet, smartphone). Rather than having standardized textbooks that reach maybe

50% of the students, let's have individualized texts that reach 100%; but doing it electronically rather than hard copy. Suddenly this technology could be efficient enough to make this happen. Having individualized texts as hard copy is not cost efficient and could never be sustained, but doing it electronically could be a game changer. It is differential learning rather than one-size-fits-all learning.

Conceptually, think of a bulls-eye with learning opportunities and content spread out all over the bulls-eye but few in the center of the bulls-eye. Now enter ping-pong where the learning opportunities and content can be targeted to just hit the center of the bulls-eye. This way we can optimize learning opportunities making them relevant to the specific learner which might not be the same learning opportunities for another learner who has a different profile of learning needs.

So what does ping-pong look like?

Think of the last time you took an exam and did really well on certain aspects of the exam but bombed others. Generally the instructor reviews all the right answers so you get the feedback on what you did wrong but that's where it ends. With ping-pong, you get an additional learning opportunity to extend learning about what you did not really understand with additional positive reinforcement giving you opportunities to test your knowledge further.

Algorithms are written that tie additional content to every exam question with additional supportive feedback which can be used to reinforce gaps in learning. These algorithms are activated based on the learner's test score. By doing this, we tie assessment to learning via ping-pong to give the individual learner the opportunity to enhance their learning beyond the assessment. In fact the assessment becomes the driver for additional learning via ping-pong rather than the assessment becoming the end goal. So rather than learn --> assessment we are changing the paradigm to learn --> assessment --> learn via ping-pong via multiple path ways. We are creating a learning - assessment - learning continuum. Here is the simple algorithm from the iLookOut program:

Pre-Assessment --> iLookOut Learning Online Program --> Post-Assessment --> Pings sent
(A1, A2, A3, A4..) (B1, B2, B3, B4..) (C1, C2, C3, C4..) (D1, D2, D3..)

All this additional ping-pong occurs electronically sent to devices in a gamification format which becomes fun for the learner. It is cost efficient because the content is sent to a device without the need for a coach or instructor to follow up although that is always a possibility for a learner having a great deal of difficulty. An assessment can be done again after the ping-pong has occurred to determine the change in the learner's knowledge base. Other assessments could be used to see if behavior changes as well as knowledge changes have occurred depending on the content. For example, the NIH R01 grant we mentioned earlier is looking at just that, how knowledge changed about child abuse reporting, but also how it changed actual behaviors in reporting of child abuse, did it make for better reporting where false negatives and positives have decreased?

As we said at the beginning, this short paper or abstract is presented for its heuristic value to get us thinking about this new ping-pong technology as both a learning and coaching enhancement. The learning principles have been with us for some time, what is different now, is the available technology which could make a costly intervention more cost efficient. We have more questions about the technology than we have answers at this point. It has tremendous potential but we need to determine if it can live up to its billing as an effective and efficient enhancement.