Student-Controlled Learning vs. Algorithms

Flink Learning products are student-controlled. By this, we mean that students choose not only when and where they use them, but also, what they work on –without limitations. They are free to choose any activity at any level, and to repeat activities as they need or wish. They use information about their performance on each activity to decide whether to repeat it, move on to a more difficult one, or to do something else entirely. This approach stands in contrast to the algorithmically controlled applications offered by most developers which use item response analysis to place each student in their next learning activity.

In general, the large amount of research on learning shows that "the degree to which students learn how to control their own learning … was highly related to outcomes"[1]. Furthermore, for computer-aided instruction, "when the student is in 'control' over his or her learning … then the effects were greater than when the teacher was in 'control' over these dimensions of learning."[2] We believe that students who feel that they are in control of their learning are more highly motivated to do the sometimes difficult work of acquiring a new skill like reading. Studies by Kanevsky & Keighley on student engagement show that, "Five interdependent features … distinguished boring from learning experiences: control, choice, challenge, complexity and caring teachers. The extent to which these five C's were present determined the extent of students' engagement and productivity.[3]"

Flink Learning software gives students control through choice. The students choose their own challenges as they are ready. The learning activities cover a range of complexity, evolving from simple alphabet activities to the application of complex analysis to readings. The only thing that the software cannot provide is a caring teacher. Rather, we encourage students to work with peers, who usually care about their co-learners, and with caring parents. In this way, we provide truly engaging learning experiences.

And what about algorithms?

- Computer-assisted instruction is one of the interventions studied by researcher John Hattie[4].
- Normal mental development and exposure to a teacher for a year generates a gain of 0.37[5].
- Adding computer-assisted instruction also shows a gain of exactly 0.37 per year. In other words, typical algorithmically-controlled software adds no value over sitting in a classroom.
- Web-based learning showed an improvement of 0.18 – half the learning from sitting for a year.

We shouldn't be surprised. People have been working on these algorithms for over twenty years, and they still haven't gotten them right. The algorithms are rarely sophisticated enough to account for the different learning pathways of real students. They offer only a few pathways, and students quickly become bored with them. On the other hand, students who feel in control are more engaged, and learn more.

Flink Learning implements best practice research by putting students in charge of their own learning instead of giving algorithms control, in order to maximize learning outcomes.

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[1] Hattie, John. *Visible Learning: a Synthesis of Meta-Analyses Relating to Achievement*, 2009, P. 48.
[2] Ibid. P. 225.
[3] Lannie Kanevsky & Tacey Keighley. *To produce or not to produce? Understanding boredom and the honor in underachievement*, Roeper Review, Volume 26, 2003 - Issue 1, P. 20-28
[4] http://visible-learning.org/2016/04/hattie-ranking-backup-of-138-effects/
[5] That is, an effect size of 0.37 from the experience in one school year. Effect sizes ranged from -0.3 to 1.44.

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