3100: Foundations of Adult Education

ORID Reflection 2

Instruct

The Art of Learning In The Age of AI

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Objective

The objective of this writing exercise is to reflect on and consider the following quote from "Adult Learning: Linking Theory And Practice" (Merriam & Bierema, 2014, p. 208), in the context of teaching and learning web development.

> *"Finally, over forty years ago Rogers (1969) articulated the very contemporary notion that in this high-speed globalized world what is really crucial for survival is that we all become lifelong learners. He wrote that 'an educated person is one who has learned how to learn … how to adapt and change' and realizes 'that no knowledge is secure, that only the process of seeking knowledge gives the basis for security.' " (Merriam & Bierema, 2014, p. 31)*

Merriam and Bierema positioned this quote in the context of writings on humanism, which they emphasize is at its core about self-directed learning, and more specifically, in the context of this quote, about lifelong learning. In their work, lifelong learning is taken to be complementary to, or at least a subset of, self-directed learning, which by default should be continuous and therefore existing outside the set of the formal learning experiences.

They add the quote seemingly to extend, or elucidate on, the five qualities of humanist 'student-centered' learning described by Carl Rogers as:

> *1. a quality of personal involvement*
> *2. self-initiated*
> *3. pervasive*
> *4. evaluated by the learner*
> *5. its essence is meaning*
> *(Merriam & Bierema, 2014, p. 30)*

The positioning of the quote and word choices like, 'crucial for survival', and 'the basis for security', give the impression Merriam and Bierema are concerned for the reader, who might understate the importance of lifelong learning. This is understandable, as the practice of lifelong learning may be by many people in many different stages of life overshadowed by social and family demands that are too intensive in terms of time and energy to accommodate it.

They seem to be suggesting strongly that survival in modernity depends on life-long-learning. Their argument is that at the time they wrote 'Adult Learning: Linking Theory And Practice,' more than 40 years had passed since Rogers 'articulated the notion' that the world is 'high-speed' and 'globalized'. The statement they're making is that a 'high-speed' and 'globalized world' demands a higher level of skill.

Intuitively, in the context of the modern technology shift, we can visualize their concerns. Five hundred years ago, the average human had only to know how to work a plow. Twenty years ago he was hard-pressed to program the VCR or remote control. Today, any given human has in his hands a high-power computer, and in his car, and home, complex computer software systems. Moreover, he must be familiar with a huge set of fast changing technical information, to remain 'in-the-know' in the usual social circles.

We see today, more than at any time in history, evidence that Miriem and Bierema's concerns were well-founded.

Our objective, however, is to examine the quote in question in the context of the field of web development, and in that field more precisely, web development instruction. What we expect to see is that is that their concerns are also well-founded.

Let's reflect on the need for lifelong learning in the field of web development.

Reflective

The nature of programming is, in my opinion, a function of the motivations that prompt its invention. Programmers are problem-solvers, but they are not always goal-oriented problem solvers. Ironically, very often they are creative problem-solvers.

A programmer might pick a subject and set into it and follow her first strong inspiration, often diving deeply into material that has already been 'solved' in a publicly available library or package.

The effect is a seemingly steady supply of new libraries, new applications, even new programming languages. New ways of doing the same thing appear again and again, day after day, all across the globe.

Programming compared to other disciplines, like mechanics, astrophysics or construction, is a laterally expansive field. Construction workers do not set about inventing new types of gyp-rock, or siding material, they go to the store and buy the materials they need. Innovation in construction is planned in pursuit of market share.

While in some cases, for example with the Go programming language, innovation in computer science is purposefully pre-meditated, often, it's the result of habitual and iterative experimentation. Both individuals and companies pick up the work of other individuals and companies and advance it. New trends appear rapidly.

The dynamics of Silicon Valley venture capitalism contributes to this self-reinforcing trend. Venture capitalist and their champion programmers are charged with the task of suiting themselves in 'regale' and marching into the 'Colosseum' armed with new languages, new ideas, and new ways of doing things. To win, their ideas must be new and they must be better.

The upshot is that word choices like, 'crucial for survival', and 'the basis for security' are much more relevant to a web developer, and consequently also to a web development instructor, because the foundational tools used in web development change rapidly.

Developers and instructors have to keep learning. The field they are in is too wide and too deep to survive without continuous steady learning. The rate of change is so severe that learning in the working life of a professional programmer could be as high as 75%.

In other words, it's feasible a computer programmer could work a 15 year career and spend 75% of her time learning new things.

If she wants to be a computer programmer and she doesn't embrace life-long learning, she will not succeed. The same can be said for male software developers.

Interpretive

The importance of lifelong learning in web development presents the instructor who encounters new students with additional challenges. Firstly, he (or she) must determine if his students are already familiar with the concepts of self-directed learning, in order to decide to the extent he must familiarize them.

Learning is energy intensive, and thorough learning, which for many is necessary to transform learning into skills, is even more energy intensive. While the average web development student might be more conducive to self-directed learning, the energy intensiveness of self-directed learning is, in general, so high that it presents some what of a barrier to entry to self-directed learning.

Moreover, and to emphasize that point, there seems to be, at least in my own experience, a somewhat long difference, in terms of hard study hours, between the time when focused intensive learning is uncomfortable, difficult, and without reward, and the time when it begins to return direct cognitive rewards, like perhaps increased dopamine levels.

Robinson and Persky describe a self-directed learning environment as one in which “the learner sets goals, determines how progress will be assessed, defines the structure and sequence of activities and a time line, identifies resources, and seeks out feedback.” (Robinson, Persky 2020)

The role they describe is proactive, in that it’s defined as a leadership role.

> *"By taking the lead on their learning, the learner takes responsibility for many activities that are traditionally dictated by the instructor, who is now free to facilitate the learning." (Robinson and Persky, 2020)*

That’s a lot of required student-powered activity, and many students might struggle in a self-directed learning curriculum simply because modern life presents too many entertaining alternatives, and the first few years of intensive study are painful and difficult without the rewards that develop later.

This presents again another challenge to the instructor. If he or she would set out to motivate and inspire students to engage in more intensive self-directed learning, he or she must ask himself, ‘how should an instructor teach students to teach themselves?’

Decisional

There are at least two strategies an instructor can employ to teach students to teach themselves. The first is highlighted in Robinson and Persky, 2020, who suggest “in a well-designed SDL environment, students’ motivation increases, as well as their feelings of control, confidence, and belief in themselves” (Robinson and Persky, 2020).

According to them, the answer seems to be in a ‘well-designed’ self-directed learning environment. Robinson and Persky call that environment ‘scaffolding.’ They say “the skills necessary for SDL should be introduced and developed in the didactic portion of the curriculum. This allows students to develop skills over time, otherwise known as scaffolding” (Robinson and Persky, 2020).

They’re talking about using behaviorist learning techniques as a kind of set of ‘training wheels’ for students who are not already high-powered self-directed learning machines.

> *" ... more self-paced or teacher-directed activities are introduced early on, during didactic instruction, to help students become more self-regulated in their “self-directedness”" (Robinson and Persky, 2020).*

The second strategy is another methodology, that can be applied to the same problem, which is the focus of a paper by Kimberly Tanner, titled ‘Promoting student metacognition’ (Tanner, 2012).

Metacognition is the awareness and understanding of one’s own thought processes and the ability to regulate them effectively. As an education methodology, it involves planning, monitoring, and evaluating one’s learning processes, and it can be effectively applied in the classroom to enhance student learning and performance.

In fact, Kimberly Tanner, with her opening quote, from (Gall et al., 1990), suggests metacognition should not be self-taught, “learning how to learn cannot be left to students. It must be taught” (Tanner, 2012).

She goes on to quote Garner in 1988:

> *"To make an individual metacognitively aware is to ensure that the individual has learned how to learn" (Tanner, 2012).*

Metacognition can, and probably should, be used as a foundation to Robinson and Persky's 'scaffolding.'

Just being aware of it can inspire students to practice it. Putting the concept, the reason for it, and the ways it is practiced into an opening lecture is likely to influence largely learning outcomes, especially if the instructor also sells the rewards a given student can expect from an adequate self-directed learning regime.

Kimberly provides, in her paper, a somewhat useful table, apparently inspired by Ertmer and Newby (1996), Schraw (1998), and Coutinho (2007). It's available at this link https://pmc.ncbi.nlm.nih.gov/articles/PMC3366894/table/T1/ and should be browsed by the reader to illustrate how an instructor might bring a student to be metacognitively aware.

It includes questions instructors should have students ask themselves "in the process of planning, monitoring, and evaluating their learning" (Tanner, 2012).

A healthy combination of metacognition material in the scaffolding, along with an intelligently designed and structured scaffolding, could bring the distracted or disinterested student more quickly into a practice of continual, disciplined, self-directed learning, which will be a critical component to success in the long-run as a student of web-development, and as a web developer.

References

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