Objective

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.

> *"Parker (2013) makes recommendations for empowering learners in the context of technology. She notes that learners need to develop the ability to discern what is important and focus on it. We need to help learners move away from seeking 'right' answers because 'now answers are everywhere.' Rather, the new educational goal should be to 'learn the process, evaluate the source, question' (p. 61)"*

The quote is interesting because today web development technologies are changing incredibly quickly, while tomorrow, by which I mean in 2025/2026, because of AI, web development technologies will be changing much more quickly.

Also, the rapid rise of artificial intelligence is completely changing not just the web development industry but also the adult learning industry. AI fakes answers, which is particularly important if one is operating on the production possibilities frontier in a field like software development.

It also comes with additional ethical considerations, like 'academic dishonesty', which includes 'plagiarism, cheating on exams, copyright violations, and fabrication of citations and references' (Storey and Wagner, 2024).

From a teaching perspective, the impact of this rapid change can be imagined as something like the impact from a tornado. Entire technologies, processes, and careers could disappear seemingly overnight.

While technology and technological diversity — in for example AI models, and the training of AI models — promises to impact both learning outcomes and facets of key factors in the field of Computer-Mediated Communication (CMC), like 'interpersonal dynamics', 'feedback and relationships' and others mentioned in Hancock, Naaman, and Levy 2020.

This presents something of a challenge, given Merriam and Bierema's statement "lifelong learning is important for being effective in changing jobs and environments …" (Merriam, Bierema, 2014).

How can teachers and students engage in life-long learning of web development intelligently when the industry is in the midst of an exponential technology shift?

The objective of this exercise, then, is to reflect on in this problem, though arriving at an optimal solution should be a matter of a more thorough research analysis.

Reflective

I chose the quote above because my specialty is web development, and I've gained over the years, some level of proficiency in adult learning, and life-long learning. In particular, I participated quite energetically and intensively from the beginning in the massive open online course (MOOC) era.

When organizations first started experimenting with MOOCs, they offered free courses to test student engagement and demand. I participated in free courses that featured well-known esteemed 'star' instructors — like Roger Peng of John Hopkins, Bill Howe of the University of Washington, and Perry Mehrling of Bards College New York — and experienced first-hand factors like: optimizing returns on effort, developing effective learning strategies, solving subject selection problems, and measuring returns on instructor selection, which, as I emphasized above, are particularly hard problems in fast changing fields like software development.

My experience showed me it was possible, though not without effort, to explore technologies to arrive at informed decisions regarding course selection.

I also learned how to improve learning efficiency and impact through various online learning strategies.

However, in only the last few years, the knowledge I arrived at has become somewhat obsolete. It's still helpful to me, in terms of my learning proficiency, but the relevance is in question when it comes to teaching others, because AI now offers even better solutions.

It makes sense then to 'interpret' some of these challenges in the context of the potential AI offers, which I'd like to do in this next section.

Interpretive

The problem of 'exponential technology shift', which I mentioned above, manifests as a subject selection problem. In web development there are simply far too many 'technologies to watch' along the 'three adoption horizons', which the 2012 Horizon Report, referenced by Merriam and Bierema (2014), on page 205, described as 'referring to the technology's likely acceptance by the mainstream within a one-year, two-to-three year, and four-to-five year time frame.'

Too many technologies, and an incredible speed of obsolescence and innovation in web technologies makes it challenging to decide on which knowledge is best passed on to students.

One solution is to apply non-generative AI analytics to the problem, like those mentioned by Storey and Wagner, 2024, 'Integrating Artificial Intelligence (AI) Into Adult Education: Opportunities, Challenges, and Future Directions': 'adaptive learning analytics', 'predictive analytics', 'prescriptive analytics'.

It's not far-fetched for AI to predict which technologies will last longer than a four-to-five year time frame, and that could help in designing curricula that can be useful to students, in terms of applicable post-graduation career skill-sets.

But, it's possibly more intelligent to partition course work into more narrow career silos, and design curricula with those silos in mind. In other words, offer more design and user experience courses and fewer JavaScript or Web Assembly courses, on account of the fact it is likely AI will evolve to take voice instruction from designers and user experience experts, via no-code AI rich software suites, to build websites and web technologies without requiring creators to have deep understanding, or even any understanding, of the programming languages and browser APIs used to build websites today.

In this way, the web development field could be partitioned into web developers and software engineers, such that the web developers don't need to know code, while web engineers require both deep and wide understanding of both programming languages and machine learning technologies in order to go under-the-hood to fix or customize software suites and retrain AI models to solve business specific problems.

In terms of the various learning strategies I discovered through trial and error during my MOOC journey, which, as I mentioned above, could be obsolete, AI again offers several solutions.

As Pedró, Subosa, et al., 2019, suggest, for example, 'The computational agent may analyze inputs including human-authored messages, communication history, personal information, or any other source of data.'

They call this 'Computer Assisted Learning (CAL)', wherein 'AI can help map each student's individual learning plans and trajectories, their strengths and weaknesses, subjects that cost more and are easily assimilated or learned, and learning preferences and activities.' (Pedró, Subosa, et al., 2019)

The intuition is that AI could be used to conduct and then analyze conversations with students to infer their learning styles and barriers to learning, as well as other situational or personality driven characteristics that can be used to tailor teaching methods and strategies to optimize learning outcomes.

In the case where the student is a life-long learner seeking subject matters insights AI could infer that and offer appropriate lessons, while in the problem-centered situation, where an adult learner is learner to solve a particular work-related problem AI could infer the situation, and again apply teaching strategies to optimize learning outcomes.

Curricula can be tailor-made on-the-fly to infer and then optimize for both long and short run objectives, as well as individual conversational and emotional needs.

These kinds of solutions to the problems mentioned above are technology solutions, which rely on software suite selection and customization, like the training of AI teaching software by curriculum designers and engineers, and then the application of those software packages to course delivery by teaching professionals.

In the next section, I want to briefly recap and discuss how I might apply the reflections from this exercise to my personal course work and program goals during the PIDP.

Decisional

To conclude, in this reflection I brainstormed the problem of subject selection in the context of a field that incurs rapid obsolescence, as well as the problem of applying AI to human specific learning characteristics.

To go back to Merriam & Bierema's observations on Parker, 2013, who notes 'learners need to develop the ability to discern what is important and focus on it', I could consider that while the optimal decisional application may be to apply AI to the problem predictively, the practical solution, in terms of my participation in the PIDP, could be to partition my expertise into silos.

For example, the take-away could be for me to consider, in the context of this program, writing a user experience course, or a design course, instead of just a JavaScript course.

JavaScript, HTML, CSS, SCSS, HUGO, and Wordpress (much more Hugo than Wordpress), are my areas of expertise, and those areas will continue to be relevant for at least engineers going forward; however, design and user experience are likely to be more in-demand as AI technologies develop, and I am knowledgeable as well in those areas.

This is something I aim to consider during this program. I'd also like to consider applying immediately AI to the problem of curriculum development, and explore in the process the application of AI to dev-ops and integrated web development pipeline operations, since that area, though I didn't mention it above, is going to be in demand in terms of applying AI to organization specific problems, since the way organizations build out their applications differs hugely from organization to organization.

It's also noteworthy that Merriam & Bierema mentioned "the new educational goal should be to 'learn the process, evaluate the source, [and] question'".

The process for adult learning in the world of fast-changing digital technologies could be more about the process than the subject. It could be more important to the learner to master the art of learning, which does need typically to be treated like a practice, because it takes work to gain proficiency in learning.

This is something to consider also, throughout the duration of my participation in this program, because it could be more impactful to teach more of the art of learning in the context of web development than it is to, for example, object-oriented JavaScript in the context of web development.

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