Personalized learning and how higher education can be unbundled for better instead of worse

William R. Watson , **Sunnie Lee Watson**

Department of Curriculum and Instruction, Purdue University, USA.

Abstract

Higher education continues to be highlighted for the stresses it is exhibiting under increasing pressures such as globalization, student diversity, information technology, and reduced public funding. Under these stresses, some have identified personalization and the unbundling of the university as either the saviors or the doom of higher education. This paper posits that a middle ground that establishes personalized learning and the unbundling of curriculum for increased transparency, relevance, and effective learning and builds off established learning and instructional theory and stated values is possible. It further discusses the role of such technologies as digital badges and artificial intelligence in supporting the adoption of such principles in higher education.

Keywords: Personalized learning; digital badges; artificial intelligence; educational change.

1. Introduction

Higher Education and its limited responsiveness to significant pressures to change has gained increasing attention, including predictions of its inevitable and fast approaching demise (citations). While public funding has shrunk (Bruininks, Keeney, & Thorp, 2010), enrollment has grown as institutions originally tasked with educating the elite 4% of society have been transformed as their models have called for mass education, and now the education of nearly all (Trow, 2007). With societal expectations shifting to the need for educating all citizens, globalization has placed additional pressure as the number of international students has also grown (Altbach, Reisberg, & Rumbley, 2009). Arvanitakis and Hornsy (2016) argue that the mission of higher education should be to develop individuals to be independent and critical thinkers capable of understanding and navigating the complexities and volatility of modern society as problem solvers. Together, these changes have created a significantly more diverse student bodies with different needs and goals and consequently requirements for different

outcomes, processes and functions at universities. These pressures and needs also have resulted in the increasing complexity of higher education as a system.

This paper argues that while concerns regarding the potential negative impacts of personalization and the unbundling of education are legitimate, so are the visions for the potential benefits of personalization, including the use of disruptive technologies such as artificial intelligence (AI) and digital badges. A middle ground is needed that embraces the needed changes that personalization can bring about, reaping the benefits for learners while at the same time keeping a clear vision of a path forward for higher education that retains its contract for social justice and service and operationalizes steps to prevent the dissolution of classic normative structures and expectations for the system of higher education.

2. Criticisms of Unbundling and Personalization

A significant and valid concern regarding the unbundling of learning processes and roles in higher education is the connection some make with an entrepreneurial approach to education. The rise of neoliberalism and its impact on higher education has led to institutes of higher education (IHE's) adopting practices that assume students attend for reasons of economic self-interest and that the primacy of market-driven economies mean a focus on consumer sovereignty, competitiveness and evaluation based on easily measured performance outcomes and alignment with business practices and entrepreneurial strategies (Olssen & Peters, 2005). In response to the pressures, financial and otherwise described above, one call for reform that has grown out of this movement is the call for unbundling the university.

McCowan (2017) describes four levels of unbundling in higher education: systems, institutions, courses, and academic staff. He specifically points to badges as external assessments of competencies, while arguing that unbundling "signals the end of the programme of study, in which academics curate learning through a process of selection and sequencing of knowledge (p. 738)." Furthermore, he notes the link between personalization for pedagogical purposes but dismisses the theoretical connections to democratizing higher education by allowing students more choice in their goals and means while also conflating personalized learning as solitary learning, resulting in isolation and the demise of the university's role of bringing together diverse individuals and experiences, ultimately concluding: "student learning can be seen to be significantly impacted by the process of unbundling, with the potential gains from personalisation offset by the loss in the relational aspects of learning and opportunities for dialogue and broader experiential learning (p. 744)."

While these concerns are valid, this paper presents principles for personalization while discussing the likewise valid potential benefits of unbundling and personalization through the leveraging of technology, specifically digital badges and AI.

3. Unbundling and Personalizing Learning

A core aspect of the concept of establishing systems of learning that support personalization is the increasing flexibility these systems would provide for what are increasingly complex requirements for learning. \ However, in today's complex world with its diverse problems, the goal of learning necessarily should shift from the ability to reproduce knowledge to instead applying knowledge and skills to different problems in different contexts (Shin, 2014).

A learning system therefore has the need to shift the focus from the teacher to the learning (Kosslyn, Nelson, & Kerry, 2017), supporting more critical and complex thinking in its learners. It therefore follows that if a system is to produce more critical, flexible, and adaptable learners capable of acquiring and applying skills and knowledge to diverse and complex contexts and circumstance, a more personalized and therefore flexible system is needed that can more effectively facilitate this more complex approach to learning (Reigeluth, 1994).

Higher education is facing unprecedented pressures and fundamentally different requirements than in the past, requiring change efforts that address a paradigmatic shift in how IHEs function – systemic change (Watson, et al., 2013). Rather than small adjustments to a system that was never designed to promote the learning of all, among other requirements, systemic change calls for the design of a new system to meet current and future needs through the application of systems thinking and design theory (Watson, et al., 2008). Unbundling can refer to restructuring instructional activities to focus on personalized learning and learning goals rather than time-based structures such as the semester calendar and units based on seat time. Related terms include micro-credentials or micro-courses, but the ultimate goal is creating more flexibility, accessibility, and personalization for learners (Olcott, 2022).

4. Principles of Personalized Learning

As previously discussed, personalization and unbundling in and of themselves need not be seen as embracive of neoliberalist policies but can instead be leveraged to facilitate a transformation of the instructional function of the university to a more learner and learning centered system. The concept of personalized learning is not new, with Keefe (2007) describing a 40 to 50 year history. The United States Department of Education (2010) defined personalization as: instruction that is paced to learning needs, tailored to learning preferences, and adjusted to the specific interests of different learners. In an environment that is fully personalized, the learning objectives and content as well as the method and pace may all vary (so personalization encompasses differentiation and individualization) (p. 12).

The approach to personalized learning we advocate for is based on core learning theories as opposed to being driven by economic factors – in fact, it could be stressed that a truly personalized approach to learning could be less efficient in terms of cost and resources while

being focused instead on increased effectiveness. The learning and motivational theories that underpin personalization of learning include constructivism, self-regulated learning, goal orientation theory, flow theory, and self-determination theory (Watson & Watson, 2016).

Again, while some view personalization as acceding the expertise of instructors to the whims of learners and the personalization instruction as standardized and decontextualized, together these theories establish a set of values that highlight what personalized learning should be for pedagogical reasons, learning that: values developing learners' self-regulation and intrinsic motivation while focus on mastering learning goals rather than comparing learners to each other; prioritizes instruction that is motivating and effective over efficiency; and values instructional methods that are motivating, incorporate social interaction, and support learner choices and goals including in with goal setting, instructional tasks, assessment approaches, and reflection practices (Watson & Watson, 2016).

5. Technology's Role in Personalization

As noted previously, information technology itself has been one of the forces raising pressure on the system of higher education to adjust while also being one significant approach to meeting some of these pressures with online educational offerings growing exponentially and such offerings giving students increased opportunities at education beyond the restrictions of time and place traditionally associated with face-to-face course offerings. Two technologies that have often identified as holding potential for personalization have been AI and digital badges.

AI, while only recently bursting onto the scene for everyday learners and instructors, has a history stretching back decades and implements subcomponents with a record in educational research such as machine learning, learning analytics, and intelligent tutoring (Hardaker & Glenn, 2025). Machine learning allows for the training of a computer on data so that it can such as for large language models (LLMs) which can be used to process natural language for applications such as chat bots (Neumann, et al., 2024). Learning analytics focus on capturing the data produced during educational activities to support analysis and targeted support according to individual student needs; a practice to this point largely applied in online learning environments to limited impact on learning outcomes but retaining great promise with increased understanding (Viberg, et al, 2018).

Beyond more out of reach goals (for the moment) of supporting evaluating and providing feedback to students, AI can significantly support other administrative tasks for instructors, such as personalizing student learning pathways based on interests and background knowledge tracking and reporting student learning, identifying learning or performance gaps and flagging them for instructor follow-up or identifying resources to facilitate addressing the problem. Removing some of the burden of administrative functions in the learning process will free

instructors to spend more time and effort focusing on larger learning outcomes, such as facilitating critical thinking and problem-solving skills rather than merely delivering content.

From a student-centered lens, chatbots can serve as always available intelligent tutors to provide students immediate answers to questions or pose questions or problems to promote further reflection. AI can also support more effective teamwork and communication, helping to select and monitor varied team roles to ensure learners stretch themselves rather than continuing to fill the role they are best at in every project.

With regards to digital badges, the rise of digital badges came from the Mozilla Open Badges platform that was funded by the MacArthur Foundation as an open platform that sought to develop ways for learners to demonstrate their competencies regardless of where they learned them (The Mozilla Foundation, et al., 2012).

Badges function as visual representations of learner competencies and function as a way to demonstration competency outside of typical accreditation of formal learning institutions. Learners demonstrate their competency and earn badges from recognized badge issuers and are then able to show their badges by sharing them on social networking sites and essentially own them. Badges can support learner autonomy and self-regulated learning (Randall, et al., 2013). Badges in education are used to incentivize learning (motivate), identify progress in learning and map out the learning path (signposts), and recognize or credential learning and achievement (Gibson, et al., 2015).

Badges, conversely, support a more personalized, learning-based educational system. Badges can embed instructional resources. They can outline specifically what a learner must do in order to demonstrate competence in a skill or mastery of an area of knowledge. Instructors pre-define what a learner must do to demonstrate competence in order to earn a badge and be credentialed as being able to satisfactorily perform a skill or demonstrate mastery of specific knowledge.

Badges allow a learner the opportunity to earn a badge on day one, if the learner already has the skills the badge is assessing. Badges can support a learner proceeding through a course at their own pace, taking more time if needed or less if they are better prepared. For example, in a course structured with badges, students can see on day one what they must complete to earn their grade in the course. For motivated students, they understand that they can earn the badges as quickly as they are able and free up more time for other coursework later in the semester. For students needing more time, if the course is structured with badges, rather than by week, they can take more time to complete the badges that are particularly challenging to them. This provides the opportunity to have a more personalized, and learner-directed process.

Furthermore, if the instructor sets up the badges with specific assessment guidelines, but broad methods of performance, it allows learners to be creative in how they demonstrate their competence. This allows for learner-ownership of the artifacts they submit to complete the

badge challenges. For example, a communication badge could support challenges associated with persuasive writing, and persuasive speaking. Learners could choose topics they have a personal passion for, and perhaps even expertise in. A letter to the editor arguing for equal protections for LGBT citizens or a video of a speech made on campus arguing for an improved environment for diversity would allow learners to be invested in the products they submit to earn badges.

However, at its most basic level, a course or program broken down into badges forces instructors to break down course learning objectives into detailed performance tasks, defining specifically how they will be assessed, and allows learners to share specific evidence behind why they earned a badge. A grade on a transcript lacks the transparency of associated artifacts. Badges still allow for differentiation between student performance, however. Badges can be granted with distinction, or at an introductory level. By setting up this pathway to different levels or hierarchies of earned badges, students may be motivated to push their learning further.

AI and badges are not the penultimate realization of supporting unbundled and personalized education with technology, however. Previous calls for realizing a system of education that focuses on student learning as opposed to time or sorting of students based on performance emphasized the need for technology to support personalized approaches (Watson, et al., 2008; Watson, et al., 2015). Personalized Integrated Educational Systems would provide the functionality to record student learning, plan for learning, manage instruction for learning, and assess learning in addition to secondary roles such as communication and administration.

6. Conclusion and Implications

The unbundling of the university, at least its curricular functions, through personalization need not sound the death knell of a socially responsible and beneficial system of education that still can fulfill its social contracts and look beyond neo-liberal policies. In fact, when unbundling and personalization are driven by sound pedagogical practices informed by established learning and instructional theories, learning benefits and improved quality can be reasonable outcomes. While the continued growth of technologies such as AI, digital badges, and perhaps one day a fully realized learning management system for personalized learning, such as that envisioned in personalized integrated educational systems (Watson, et al., 2015) will play a significant role in the adoption and effective implementation of such approaches, further cases are needed to support research to examine and refine beneficial implementations of these concepts. What cannot be denied is that the future of higher education will be one of change. It is the contention of the that a vision of progress guided by established theory and values means leveraging technology and reaping the benefits while striving to mitigate potential negatives. The first step in systems design is visioning (Watson, et al., 2008), and we present this paper as one such potential vision of a middle ground to personalization and unbundling.

References

Arvanitakis, J., & Hornsby, D. J. (2016). Are universities redundant? In J. Arvanitakis, & D. J. Hornsby (Eds.). *Universities, the citizen scholar and the future of higher education* (pp. 7–20). London: Palgrave Macmillan.

Gibson, D., Ostashewski, N., Flintoff, K., Grant, S., & Knight, E. (2015). Digital badges in education. *Education and Information Technologies*, *20*(2), 403-410.

Hardaker, G., & Glenn, L. E. (2025). Artificial intelligence for personalized learning: a systematic literature review. *The International Journal of Information and Learning Technology, 42*(1).

Keefe, J. W. (2007). What is Personalization? *Phi Delta Kappan*, (November), 217–224.

Kosslyn, S. M., Nelson, B., & Kerrey, B. (2017). *Building the intentional University: Minerva and the future of higher education*. Cambridge, MA: MIT Press.

McCowan, T. (2017). Higher education, unbundling, and the end of the university as we know it. *Oxford Review of Education*, *43*(6), 733-748.

The Mozilla Foundation, Peer 2 Peer University, & The MacArthur Foundation. (2012). Open Badges for lifelong learning. Retrieved from https://wiki.mozilla.org/images/5/59/OpenBadges-Working-Paper_012312.pdf

Neumann, A. T., Yin, Y., Sowe, S., Decker, S., & Jarke, M. (2024). An LLM-Driven Chatbot in Higher Education for Databases and Information Systems. *IEEE Transactions on Education.*

Olcott Jr, D. (2022). Micro-credentials: A catalyst for strategic reset and change in US higher education. *American Journal of Distance Education*, *36*(1), 19-35.

Olssen, M., & Peters, M. A. (2005). Neoliberalism, higher education and the knowledge economy: From the free market to knowledge capitalism. *Journal of education policy*, *20*(3), 313-345.

Randall, D. L., Harrison, J. B., & West, R. E. (2013). Giving credit where credit is due: Designing open badges for a technology integration course. *TechTrends*, *57*(6), 88-95.

Reigeluth, C. M. (1994). The imperative for systemic change. In C. M. Reigeluth & R. J. Garfinkle (Eds.), *Systemic change in education* (pp. 3-11). Englewood Cliffs, NJ: Educational Technology Publications.

Shin, J. C. (2014). The university as an institution of higher learning: Evolution or devolution? In J. C. Shin, & U. Teichler (Eds.). *The future of the post-massified university at the crossroads* (pp. 13–27). Heidelberg: Springer.

United States Department of Education. (2010). *Transforming American education: Learning powered by technology* [National Educational Technology Plan 2010]. Washington, DC: Office of Educational Technology, U.S. Department of Education.

Viberg, O., Hatakka, M., Bälter, O., & Mavroudi, A. (2018). The current landscape of learning analytics in higher education. *Computers in human behavior*, *89*, 98-110.

Watson, S.L., Watson, W. R., & Reigeluth, C. M. (2008). Systems design for change in education and training. In J.M. Spector, M.D. Merrill, J.J.G. van Merrienboer & M.P. Driscoll (Eds.), *Handbook of research on educational communications and technology* (3rd ed., pp. 692-701). London: Routledge.

Watson, W. R., & Watson, S. L. (2013). Exploding the ivory tower: Systemic change for higher education. *TechTrends*, *57*(5), 42-46.

Watson, W. R., Watson, S. L., & Reigeluth, C. M. (2015). Education 3.0: Breaking the mold with technology. *Interactive Learning Environments, 23*(3), 332-343. DOI: 10.1080/10494820.2013.764322

Watson, W. R., & Watson, S. L. (2016). Personalized instruction. In C.M. Reigeluth & B. Beatty (Eds.), *Instructional-Design Theories and Models* (Vol. 4)(pp. 93-120). New York: Taylor & Francis.