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Online Postsecondary Adult Learners: An Analysis of Adult Learner Characteristics and Online Course Taking Preferences

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ABSTRACT

This study examines the selection of online course taking by adult learners. Specifically, this study evaluates the relationship between adult learner characteristics and their choice of online, hybrid, or all in-class programs to identify emerging trends in course-taking preferences. Using survey data from 7,861 adult students age 24 and older from 8 institutions in the Midwest, this paper identifies significant differences in adult learner course-taking preferences based on such factors as age, marital status, presence of children, motivation to attend college, and part-time versus full-time enrollment status combined with work. These findings have meaningful implications for promoting adult learner degree completion through online program enrollment, especially in a post-COVID-19 world.

Introduction

Improving post-secondary completion (i.e., degrees and certificates) among adult learners continues to be a topic that attracts national, regional, and local interest. Finding a functional definition of who adult learners are and their characteristics is difficult for researchers (Kasworm, 2018). Adult learner appears to be the most commonly accepted terms, according to Carlson Mccall, Padron, and Andrews (2018), as "accurate, descriptive and non-pejorative" (p. 30). For this study, adult learners are those over the age of 24 who have never attended college, are pursuing further credentials, or returning to complete a degree they left unfinished. Demand for employees with some form of post-secondary degree, credentialing, or training beyond high school continues to grow at a pace that traditional-age college students alone cannot satisfy (Carnevale, Smith, & Strohl, 2013; Merisotis, 2016). Recent data from the Center for Regional Economic Competitiveness shows nonacademic institutions offer over half of the nearly one million credentials offered, including badges, certificates, licenses, and apprenticeships (Credential Engine, 2021). As a result, state and local governments, employers, and post-secondary institutions are increasingly targeting adults without post-secondary degrees for continued learning.

Increasing numbers of states have launched specific initiatives directed at adults who have taken some college courses but failed to complete their degrees. For example, Indiana's "You Can Go Back Campaign" is a 7.5 USD million initiative funded by state grants, local colleges, and employers to increase by 2025 the percentage of Indiana residents with an education beyond high school to 60% (includes certificates, associate, and bachelor's

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degrees). The initiative offers incentives that provide students with scholarships, flexible course schedules, online classes, credit for work and military experience, tuition discounts, and debt forgiveness programs. At least twelve other states have similar initiatives to help adults complete a post-secondary degree or credential.

Enrollment data across a wide range of institutions reflects the demand for post-secondary credentialing by adult learners. The National Center for Education Statistics (NCES) Condition of Education survey data found that, as of 2017, adult learners aged 25 and older represented a large majority of part-time students at both two- and four-year private nonprofit and for-profit institutions: 42% and 39%, respectively (National Center for Education Statistics. [NCES], 2020b).

To meet the need for more post-secondary degree holders, higher education encourages the development of new technology and teaching practices to cater to adult learners (Carnevale, Smith, & Strohl, 2010; Chen, 2017). Online education emerges as an especially effective solution because it can not only reduce costs for the student but also takes less time to degree or program completion, increases retention of information, and ensures high-quality learning outcomes (OECD, 2020; Trout & Vela, 2016). The Babson Survey Research Group, which tracks the trends and patterns of online higher education enrollment, found that distance student enrollment – defined as enrollment in at least one online course – increased for the fourteenth straight year in 2016 (Allen & Seaman, 2017). These trends posit the need to understand the varying conditions and factors that motivate and influence adult learners enrolling predominantly in online programs.

The purpose of this study is to gain a better understanding of the characteristics of adult learners and their online course-taking preferences. More knowledge of the adult learner population and their course-taking preferences can help instructors and institutions target and adapt their pedagogical and heutagogical strategies to facilitate enrollment retention and degree completion for adult learners. To that end, this study examines how online learning preferences vary with adult learner characteristics, including age, gender, marital status, enrollment status, employment status, prior level of education, and presence of children. We investigate how degree and academic program relates to online course-taking preferences. We explore how adult learners' motivations for pursuing a post-secondary credential relate to their online course-taking preferences. Adult preferences for learning modality are important areas of study now and will continue to be as this scholarship influences policymakers at the local, state, and national levels to ensure educational programs alignment, availability, and accessibility to adult students.

Literature review

Why adult students enroll in higher education

Adult learners may be motivated to enroll in a post-secondary program for many reasons based on the benefits associated with post-secondary education. Researchers document the benefits of post-secondary education on employment success and future earnings (Redford & Mulvaney Hoyer, 2017; Sommerfeld, 2016). Workers with advanced educational degrees or credentials earn more, are less likely to be unemployed, are more likely to be promoted, have health and dental benefits, and have a sense of occupational prestige compared to their less-educated counterparts (Belfield & Bailey, 2011; Broton, Goldrick-Rab, & Benson, 2016;

Carnevale et al., 2013). Research shows individuals with a bachelor's degree earn on average 82% more than workers with a high school diploma (Carnevale et al., 2013). Furthermore, individuals with a bachelor's degree obtain fulltime, year-round employment at higher rates as compared to high school completers (National Center for Education Statistics. [NCES], 2020a). The benefits from the long-term earning power and stable tenure in the workforce justify the incurrence of reasonable debt necessary to attain a degree. The attainment of an advanced degree enhances one's human capital, reflected by various rewards in the workplace. As more adult learners opt to pursue credentials, higher education leadership gains insights from understanding adult learner characteristics, including their preferences for different learning environments (classroom or online).

Factors that influence adult learner enrollment

Despite the advantages of completing a post-secondary degree, several key factors may impede adult learners' pursuit of further education. Some of these factors the learner may have little to no control over. Adult learners often manage multiple roles and have more complex identities than traditional students. These learners are more likely to juggle family responsibilities (parenting or serving as a caregiver for a partner or parent), reside off-campus, and navigate financial independence (Jepsen & Montgomery, 2012; Markle, 2015), which have a significant impact on retention. Adult learners were also more likely to face significant time constraints because they often work full or part-time to fund their education (Gault, Reichlin, & Román, 2014). A lack of childcare support on campuses makes attending school more complex, and some adult learners elect to prioritize parenting over-enrollment (Bergman, Gross, Berry, & Shuck, 2014). This can delay their education or result in the learner studying only part-time (Markle, 2015; Schatzel, Callahan, Scott, & Davis, 2011). Bergman et al. (2014) found in controlling for all factors, when adult learners had money to finish their degree, the likelihood of completing increased by approximately 40%.

Adult students also differ from traditional students in "marker experiences" (i.e., marriage, divorce, getting/losing a job, changing careers, etc.). Marker experiences may provide stronger motivation to acquire specific knowledge or skills compared to younger students (Sheehy, 2006). The existence of these catalysts or life events can push individuals back to school and can motivate them toward completing a credential (Markle, 2015; Swain & Hammond, 2011). Despite the presence of strong influencers and catalysts, the study of the motivational factors that influence mature adults to enroll in higher education remains an important yet under-researched topic.

Adult learners and online education

Prior research firmly establishes both the growth in online enrollment in post-secondary programs of adult learners and the concurrent weak degree completion rates for students enrolled in online programs (Garrett, 2018). With few exceptions, little research focuses on the *selection* of adult learners into online programs. What factors affect the choice of learning modality (online, in-person, or a hybrid mix) for adult learners? Liaw, Huang, and Chen (2007) found that perceptions of distanced learning as an effective method of education correlate positively with perceptions of online learning as an autonomous, self-paced environment, an instructor-led learning environment, and/or an effective multimedia

learning environment. Other research primarily highlights adult learner work obligations and the flexibility and/or accessibility that online programs offer as reasons for enrolling in online programs (Ilgaz & Gulbahar, 2017). Sun, Tsai, Finger, Chen, and Yeh (2008) identify course, instructor, and program-specific factors that affect online learner satisfaction and the likelihood that students will enroll in online courses. These factors include perceived usefulness of the course, course flexibility, instructor response timeliness, diversity of assessment, and perceived ease of use (Sun et al., 2008). Most existing studies on online learner motivations survey populations of students exclusively enrolled in online programs, and as such, can say little definitive about the factors that differentiate adult learners who choose fully online, hybrid, or fully in-person courses. Recent studies address the effects and implications of *forced* online learning due to Covid-19 but tell us little about voluntary selection into online programs (Abdulkareem & Eidan, 2020; OECD, 2020).

Existing research instead attempts to shed light on the challenges faced by adult learners in online programs, an important area of inquiry given the weak completion rates for online programs (Garrett, 2018). Scholars found that many adult learners face internal challenges to completing their online programs, often in the form of work, family, or other social obligations that create time management problems for learners (Selwyn, 2011; Yasmin, 2013). Notably, many of these time management challenges that adult learners face in online programs may be some of the factors that influenced them to enroll in online courses in the first place. It is therefore worth investigating the extent to which existing obligations affect enrollment choices.

Research repeatedly noted the technological challenges associated with successful distanced learning. Scholars found that older adult learners often lack the technological fluency to successfully participate in online programs and interact with peers and instructors (Chang & Kang, 2016; Dzakiria, 2012; OECD, 2020). This conclusion is consistent with findings by Sun et al. (2008) that online learner satisfaction correlated with attitudes toward and anxiety about computer and internet usage. In addition to technological challenges faced by individual learners, online learning requires consistent access to broadband internet (Dzakiria, 2012; Kahu, Stephens, Zepke, & Leach, 2014; OECD, 2020). These findings suggest that older cohorts of adult learners may be less likely to enroll in online courses compared to younger cohorts of adult learners.

This study seeks to contribute to our collective understanding of adult learners and online learning by examining factors and learner characteristics that correlate with selection into fully online, hybrid, and fully in-person programs. In doing so, we hope to shed further light on the enrollment preferences of adult learners.

Framework and research questions

In seeking to identify patterns between adult learner characteristics and online course preferences, we adapt Mackeracher's (2005) assumptions about the characteristics that separate adult learners. Mackeracher posits six differentiating characteristics: (1) amount of life experiences; (2) pressures as a function of social position and social roles; (3) needs for learning; (4) capacity for abstract thought; (5) ability to express needs and identify learning strategies; and (6) amount of responsibility placed on them by society. We address three of these characteristics in this study. The participant's age serves as a proxy for the first characteristic, the amount of life experiences. The adult learner's marital status, number of

dependent children that they are responsible for, and employment status (full or part-time) address the second characteristic of the pressures placed on them by the roles they play. Lastly, two options express the amount of responsibility placed on adult learners by society: 1) the adult learners' motivation to pursue a post-secondary credential and 2) their commitment to enroll in either a part-time or full-time academic program.

While Mackeracher's (2005) assumptions about adult learners are seldom used to explore why and which post-secondary credentials are pursued, they highlight the importance of social context in adult learning, which we posit influences how and why adults pursue different post-secondary learning options, and to what extent. Learning is an emotional experience, and the interrelationship of emotions and learning, according to Jarvis (2010) is that emotions have a considerable influence on our thoughts, motivations, beliefs, values, and attitudes. Furthermore, Mackeracher (2005) states, "each group of adult learners … will be heterogeneous in nature and every individual in the group will be a complex mixture of style and ability" (p. 79), which makes teaching them both challenging and unique. Because adult learners are so different, understanding what characteristics lead to different online learning preferences is worthy of study.

Our research questions for this exploratory study follow:

RQ:1. Educational characteristics: This question posits how educational characteristics that include current education level, type of program enrolled, academic program, and enrollment status paired with work affect adult learner selection preferences for online course enrollment?

RQ:2. Learner motivations: This question posits how adult learner motivations for pursuing a degree influence the learning approach they select?

RQ:3. Learner characteristics: Adults' decision to pursue education may depend on their age, marital status, dependent children, race, and first-generation to attend college. This question posits how these factors shape the decision to pursue online or in-class learning options.

Methods

Eight institutions in the Midwest, three nonprofit four-year universities, two for-profit colleges, one independent liberal arts college, and two private nonprofit colleges/universities collaborated on this study. Partners shared an interest in understanding career and learning motivations of their adult students who, for this study, adult learners are those over the age of 24 who have never attended college, who are pursuing further credentials, or returning to complete a degree they left unfinished. The study employed a purposive sampling technique described by Marshall and Rossman (1989). IRB granted approval to administrator an electronic survey, comprised of approximately 50 questions, several with multiple items, to a large convenience sample of adult learners. The survey yielded 10,675 useful, but many partially completed responses.

Research participants identify as 76% female and 24% male, consistent with previous research where adult females enrollment exceeds males (Green & Kelso, 2006). The groups' racial profile indicated participants as mostly White (non-Hispanic) (84%) with Black (9%), Hispanic (2%), Multi-ethnic (3%), Native American (1%), and Asian (1%) composing the rest of the sample. Seventy percent identified as first-generation students, being the first member of their family to attend a college or university. The average age was 37.6 years.

Participants reported an average of 14.3 years of full-time work experience. Thirty-eight percent enrolled with a high school degree or equivalent, 23% with an associate degree, and eight percent with credentials, certificates or apprenticeships attained after high school graduation. Thirty-two percent enrolled with previous college credit but failed to complete a degree.

Variables

The survey questions covered the participant's current level of formal education, work history, employment characteristics (i.e., income, job stress, and flexibility in work hours), future career outlook, attitudes toward work and other demographic and socioeconomic factors. Respondents could refuse to answer any question, a common occurrence among the demographic variables. Respondents provided the percentage of their coursework taken or expected to be online. Due to the non-normal distribution of this variable, we created a categorical variable composed of three groups: all in-class coursework, hybrid program with a mix of online and in-class courses, and all online coursework.

Variables that focused on education included education level at time of enrollment (high school, college credit no degree, credential/certificate/apprenticeship and associates), program enrolled (credential/certificate, associate's degree, or bachelor's degree), and academic discipline (business, medical sciences & services, education & human services, technical, and all others). Five common reasons adults pursue a post-secondary education included: (1) degree needed for career advancement in current organization, (2) seeking a career change, (3) training and education required after losing job, (4) attainment to fulfill a personal goal, and (5) a role model to their children. Since respondents could select multiple reasons, each reason was treated as a unique variable. Enrollment status and work participation offered six combinations (full-time enrollment with full-time, part-time and no work, and part-time enrollment with full-time, part-time and no work). Demographic variables included gender (men & women), race (White & All other), marital status (living with partner, divorced/separated, married, single), dependents under 18, and first-generation student.

Table 1 presents the respondent characteristics of interest for the population under study. The majority are married or living with their partner. Fifty-seven percent hold responsibilities for dependent children. Slightly more than one-third are not working while in school (31% of full-time attenders and 5% of part-time attenders). The primary reasons for pursuing a degree focused on the desire to seek a career change and personal fulfillment.

Data analysis

With a categorical dependent variable, a Multinomial Logistical Regression (MLR) served as the appropriate analytical tool (Hosmer, Lemeshow, & Sturdivant, 2013). MLR models predict membership in the dependent variable (learning approach) by the independent variable(s). The log odds ratio (Exp(B)) measures the likelihood of being in one learning approach over others. We drew on a subset of these survey questions (educational background, motivation and demographic characteristics). After accounting for missing data, 7,861 cases entered the statistical model. The MLR model specified learning approach (online courses taking preference) as the dependent variable. The

Table 1. Characteristics of adult learner respondents in this study.

Variables	Categories	Distribution
Learning approach (dependent)	All online	17%
	Hybrid	30%
	All in-class	53%
Education at enrollment		
	High School	38%
	College credit no degree	32%
	Associates	23%
	Credential/Apprenticeship	8%
Program enrolled		
	Credential/Certificate	6%
	Associate	53%
	Bachelor	41%
Academic program		
	Business	29%
	Education/Human Services	14%
	Medical Sciences & Services	34%
	Technical (IT, Computer Science, e.g.)	12%
	All other (Communications, Social Science, e.g.)	11%
Reason for pursuing degree		
	Degree needed for career advancement	16%
	Desire (seek) change of career	48%
	Training/degree needed after loss of job	22%
	Personal fulfillment	56%
	Role model	36%
Full-time enrollment		
	Not working	31%
	Working part-time	16%
	Working full-time	23%
Part-time enrollment		
	Not working	5%
	Working part-time	5%
	Working full-time	20%
Gender		
	Men	24%
	Women	76%
Race		
	White (non-Hispanic)	84%
	All others	16%
Marital status		
	Married	52%
	Living with partner (not married)	10%
	Divorced/separated	15%
	Single	24%
Dependent children		
	Children < 18	57%
	No children < 18	43%
First-generation in college		
	Not first gen	30%
	First gen	70%
Age	Average 37.6 years Standard deviation 9.7 Range 24 to 62	

independent variables entered in stepwise procedure with age as the covariate, first, education parameters (RQ1) next, followed by motivation (RQ2), and finally the demographic characteristics (R3). Independent variable results reflect all other variables held constant.

Results

Slightly over half the respondents chose in-class instruction with no online coursework. An additional 30% chose a hybrid program delivering a mix of in-class and online instruction. Only about one-fifth chose a program entirely delivered online.

The overall model results showed a modeling fit (likelihood ratio tests) with $\lambda^2 = 1010.21$, df = 54, $p < .001$, Nagelkerke's pseudo-R-square = .257 and the Goodness of Fit Pearson $\lambda^2 = 7731.22$, df = 7820, $p = .760$. Table 2 presents the results for the likelihood ratio tests. The model contains 54 degrees of freedom that reflect the number of independent values in the data sample. All major variables proved significant at the $p < .05$ level with the exception of two motivational factors (seeking a career change and serving as a role model), race, and first-generation.

Exp(B) indicates the odds of selecting an online program (all online or hybrid) or all in-class. Table 3 presents all the parameter estimates for the comparison of all online with all in-class programs and hybrid programs with all in-class instruction.

Age (covariate)

Age (covariate), with other variables held constant, provided significant for the comparison of all online and all in-class course-taking options. Younger adult students prefer in-class programs to online programs. Exp(B) is .983 indicates that a decrease in age enrollment in online programs is 1.7% less for every year. For example, a 25-year-old student is 17% less likely than a 35-year-old student or 34% less likely than a 45-year-old student to be enrolled in all online program. Age was insignificant in the comparison of hybrid instruction with all in-class instruction showing little difference across age (Exp(B) = .995).

Research Question 1.

Educational factors had a major influence on shaping the decision to pursue online, hybrid, or classroom programs. Current level of education, credential/degree adult seeks to

Table 2. Likelihood ratio test results for MLR model.

	Model Fitting Criteria	Likelihood Ratio Tests		
Effect	−2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	7088.586[a]	.000	0	.
Age	7096.320	7.734	2	.021
Current education	7113.510	24.924	10	.005
Credential working on	7184.577	95.990	4	.000
Academic program	7343.324	254.737	8	.000
Need degree for CA	7107.706	19.119	2	.000
Seek career change	7093.613	5.027	2	.081
Need training job loss	7094.598	6.012	2	.049
Personal fulfillment	7101.695	13.109	2	.001
Role model	7090.005	1.419	2	.492
Enrollment status and work	7170.222	81.636	10	.000
Gender	7116.559	27.973	2	.000
Race	7089.276	.689	2	.709
Marital status	7124.852	36.266	6	.000
Dependent children	7101.955	13.368	2	.001
First-generation	7090.842	2.256	2	.324

The chi-square statistic is the difference in −2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0

a.This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

Table 3. MLR parameter estimates for model of learning approaches.

LearningApproach[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B) Lower Bound	95% Confidence Interval for Exp(B) Upper Bound
allonline	**Intercept**	.893	.421	4.498	1	.034			
	Age	−.017	.006	7.639	1	.006	.983	.971	.995
	Education at enrollment								
	High School degree	−.360	.141	6.543	1	.011	.698	.529	.919
	College Credit no degree	−.245	.132	3.441	1	.064	.783	.605	1.014
	Apprenticeship/certificate	−.556	.221	6.301	1	.012	.574	.372	.885
	Associates Degree	0[b]	.	.	0	.	.	.	.
	Credential pursuing								
	Certificate/credential	−1.286	.302	18.094	1	.000	.276	.153	.500
	Associates	−.992	.123	65.129	1	.000	.371	.291	.472
	Bachelors	0[b]	.	.	0	.	.	.	.
	Discipline enrolled								
	All other disciplines	−.838	.156	28.950	1	.000	.432	.319	.587
	Education/HS	−1.854	.178	108.999	1	.000	.157	.111	.222
	Technical	−.007	.162	.002	1	.963	.993	.722	1.365
	Med Sciences/service	−1.711	.147	135.102	1	.000	.181	.135	.241
	Business	0[b]	.	.	0	.	.	.	.
	Motivation								
	Degree needed CA (No)	−.526	.133	15.628	1	.000	.591	.455	.767
	Degree needed CA (Yes)	0[b]	.	.	0	.	.	.	.
	Need train/deg job loss (No)	.345	.145	5.622	1	.018	1.412	1.062	1.877
	Need train/deg job loss (Yes)	0[b]	.	.	0	.	.	.	.
	Personal fulfillment (No)	−.276	.112	6.037	1	.014	.759	.608	.946
	Personal fulfillment (Yes)	0[b]	.	.	0	.	.	.	.
	Enrollment status and work								
	Full-time/no work	.369	.238	2.396	1	.122	1.446	.906	2.306
	Full-time/part-timework	−.787	.268	8.660	1	.003	.455	.269	.769
	Full-time/full-time work	−.358	.241	2.205	1	.138	.699	.435	1.121
	Part-time/full-time work	.452	.241	3.519	1	.061	1.572	.980	2.521
	Part-time/part-time work	.267	.301	.787	1	.375	1.306	.724	2.354
	Part-time/no work	0[b]	.	.	0	.	.	.	.
	Gender								
	Men	−.681	.133	26.425	1	.000	.506	.390	.656
	Women	0[b]	.	.	0	.	.	.	.
	Marital status								
	Married	.628	.184	11.588	1	.001	1.873	1.305	2.688
	Living w/ partner	.242	.189	1.649	1	.199	1.274	.880	1.843
	Divorced/separated	.675	.141	22.929	1	.000	1.965	1.490	2.591
	Single	0[b]	.	.	0	.	.	.	.
	Dependent children								
	Children<18 (Yes)	.432	.118	13.373	1	.000	1.540	1.222	1.941
	Children<18 (No)	0[b]	.	.	0	.	.	.	.

(*Continued*)

Table 3. (Continued).

LearningApproach[a]		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B) Lower Bound	95% Confidence Interval for Exp(B) Upper Bound
Genhybrid	**Intercept**	.807	.336	5.753	1	.016			
	Education at enrollment								
	High School degree	−.436	.113	14.995	1	.000	.647	.519	.806
	College credit no degree	−.256	.107	5.731	1	.017	.774	.627	.955
	Apprenticeship/certificate	−.634	.163	15.158	1	.000	.531	.386	.730
	Associates	0[b]	.	.	0	.	.	.	.
	Credential pursuing								
	Credential/Certificate	−1.133	.211	28.828	1	.000	.322	.213	.487
	Associates	−.631	.096	43.022	1	.000	.532	.441	.642
	Bachelors	0[b]	.	.	0	.	.	.	.
	Discipline enrolled								
	All other disciplines	−.635	.132	23.086	1	.000	.530	.409	.686
	Education/HS	−.602	.123	23.921	1	.000	.548	.430	.697
	Technical	−.376	.145	6.708	1	.010	.687	.517	.913
	Medical sciences/services	−.826	.107	59.145	1	.000	.438	.355	.541
	Business	0[b]	.	.	0	.	.	.	.
	Motivation								
	Need deg for CA (No)	−.410	.117	12.239	1	.000	.664	.528	.835
	Need deg for CA (Yes)	0[b]	.	.	0	.	.	.	.
	Seek career change (No)	−.175	.081	4.694	1	.030	.840	.717	.983
	Seek career change (Yes)	0[b]	.	.	0	.	.	.	.
	Personal fulfillment (No)	−.292	.087	11.280	1	.001	.747	.629	.885
	Personal fulfillment (Yes)	0[b]	.	.	0	.	.	.	.
	Enrollment status and work								
	Full-time/no work	.491	.200	6.049	1	.014	1.635	1.105	2.418
	Full-time/part-time work	.227	.203	1.245	1	.264	1.254	.842	1.868
	Full-time/full-time work	.348	.193	3.258	1	.071	1.416	.971	2.067
	Part-time/full-time work	.471	.204	5.325	1	.021	1.601	1.074	2.389
	Part-time/part-time work	−.033	.264	.016	1	.900	.967	.576	1.624
	Part-time/no work	0[b]	.	.	0	.	.	.	.
	Gender								
	Men	−.237	.101	5.511	1	.019	.789	.648	.962
	Women	0[b]	.	.	0	.	.	.	.
	Marital status								
	Married	.084	.147	.325	1	.569	1.087	.816	1.449
	Living with partner	.228	.137	2.769	1	.096	1.256	.960	1.642
	Divorced/separated	.377	.106	12.668	1	.000	1.457	1.184	1.793
	Single	0[b]	.	.	0	.	.	.	.

a.The reference category is: allinclass.
b.This parameter is set to zero because it is redundant.

complete, academic program and enrollment status plus work all showed significance in the model for both the comparison of all online and all classroom and hybrid and all classroom.

Current education. High school completers are 30% less likely (Exp(B) = .698) than students with an associate degree to enroll in fully online courses. Similarly, credential / apprentice holders (Exp (B) = .574) are 43% less likely than associate degree holders to be in online programs. Though adult learners with some college experience are not significantly different from their associate degree counterparts, they still are 22% less likely to be in all online programs.

In the comparison of hybrid and in-class programs, high school completers (Exp(B) = .647), some college completed (Exp (B) = .774), and credential/apprentice holders (Exp(B) = .531) are less likely to be in hybrid programs than those with associate's degrees, 35%, 23% and 47%, respectively. In sum, the likelihood of enrolling

in programs whether fully or partially online increases with level of education attainment at time of entering the program.

Credential or degree enrolled. In comparing membership in all online and all in-class, students enrolled in certification/credential (Exp(B) = .276) and associate (Exp(B) = .371) programs were 72% and 63% less likely to be in all online programs than students enrolled in bachelor's programs.

For the comparison of hybrid and in-class options, students enrolled in certificate/credential (Exp(B) = .322) or associate (Exp(B) = .532) programs were 68% and 47% less likely to be in hybrid programs than students completing a bachelor's degree. Similar to level of education, the likelihood of enrolling in online courses increases with the level of the program with bachelor's students most likely to enroll in online courses.

Academic discipline. Comparisons across academic program showed that education/human services (Exp(B) = .157), medical services (Exp(B) = .181) and all other disciplines (Exp(B) = .432) were less likely to be in online programs than those in business programs by 84%, 82% and 57%, respectively. Technical students were not significantly different from business students in their selection of online or in-class. In the comparison of hybrid to in-class learning options, all disciplines are less likely to be in hybrid programs than business: medical services (Exp(B) = .438), education/human services (Exp(B) = .548), technical (Exp(B) = .687) and all other programs (Exp(B) = .530) or 56%, 45%, 31% and 47%, respectively.

Enrollment status and work. We also evaluated different combinations of enrollment status (full-time and part-time) and work (full-time, part-time and not working), with part-time and no work serving as the redundant measure. Students enrolled full-time and working full-time are 1.45 times more likely to enroll in online programs than part-time students not working. Full-time enrollees working part-time and not working are 54.5% and 30% less likely, respectively, to enroll in online programs than part-time not working students. In comparing just the full-time enrolled students, those students working full-time are 3.18 times and 2.07 times more likely to be in online programs than those full-time students working part-time or not working, respectively.

Students enrolled part-time while working full-time are 1.57 times more likely to be in online programs than part-time students who are not working (Exp(B) = 1.572). Likewise, part-time enrollees working part-time are 1.31 times more likely to be in online programs than those not working (Exp(B) = 1.306). Part-time students working full-time are 1.2 times more likely to be in online programs than those part-time students working part-time.

For the comparison of hybrid and in-class programs, full-time enrollees working full time (Exp(B) = 1.635) are 1.64 times more likely to be in hybrid programs than those part-time students who are not working. Similarly, full-time students working part-time, full-time students who are not working, and part-time students working full-time are 1.25, 1.42 and 1.60 times more likely to be in hybrid programs than part-time students who are not working. The difference between those part-time students working part-time and those not working was insignificant.

The full-time students working full-time were 1.3 times and 1.15 times more likely to participate in hybrid courses than full-time students working part-time or not working. Part-time attendees working full-time are 1.65 times more likely to be in hybrid programs than those part-time students working part-time. These findings provide further evidence

for the notion that online courses provide needed flexibility for adult learners with significant demands on their time, especially in the form of concurrent employment.

Research question 2

This question examines the motivations that impel adults to engage in learning programs and influence their decision to undertake online, hybrid or in-class programs. The need for a degree or other credential after losing a job, pursuing a degree for career advancement, and personal fulfillment appeared to shape significantly the choice of learning modality.

Motivations. In comparing membership in online or in-class students, learners who are not pursuing a degree for advancement in their company are 41% less likely to be enrolled in online programs (Exp(B) = .591) than those pursuing a degree for advancement purposes. Those not needing training/education due to losing a job are 1.41 times more likely to enroll in all online programs (Exp(B) = 1.412) than those who need training after losing their job. Those students not pursuing education for their personal fulfillment are 24% less likely to be engaged in all online programs (Exp(B) = .759) than those who are.

Those learners not seeking a degree to advance in their organization are 34% less likely to be in hybrid classes compared to those who are seeking advancement (Exp(B) = .664). Students not seeking a career change were 15% less likely to select hybrid programs than those who are. Similarly, those students not seeking personal fulfillment are 25% less likely to enroll in hybrid programs than those students who are (Exp(B) = .747).

Adult learners seeking advancement within their current organization or personal fulfillment are more likely to enroll in hybrid or all online programs. Adult learners seeking retraining after losing a job are more likely to enroll in in-person courses than online courses.

Research Question 3.

This question addresses the role that gender, race, marital status, dependents under 18, and being a first-generation college attender plays in selecting to learn online or in the classroom. Race and first-generation were not significant for all online and all in-class comparison and race, first-generation and dependents insignificant in hybrid and in-class comparison.

Gender. With all other variables held constant, gender was significant in both comparisons of online and hybrid learning with in-class option. Men were 49% less likely to be pursuing online programs than women (Exp(B) = .506). Men were also 21% less likely to pursue hybrid learning programs than women (Exp(B) = .789).

Marital Status. Individuals living with their partner (Exp(B) = 1.873), divorced (Exp(B) = 1.274) and married (Exp(B) = 1.965) are 1.9, 1.3 and 1.97 times more likely to engage in all online learning than single individuals. The comparison between hybrid and in-class learning options showed insignificant results for living with partner and divorced individuals relative to single students. Yet, students living with their partners and divorced are 9% and 26% more likely to be in hybrid programs than single students. Married students are 1.46 times more likely to be in hybrid programs than single students.

Dependent Children. Students with dependents under the age of 18 are 1.54 times more likely to select online programs than those without young dependents (Exp(B) = 1.540). Students with dependent children were not significantly different from students with no young dependents in selecting between hybrid and in-class options. Students with young dependents were 7% less likely to opt for hybrid programs compared to students with no young dependents.

Discussion

The results of this study identify meaningful patterns between adult learner characteristics and online course taking preferences. This study demonstrates that personal characteristics of adult learners significantly correlate with online course-taking preferences. Relatively younger and single adult students are less likely to enroll in online courses, while adult learners with employment obligations, dependent children, higher levels of prior education, and women are more likely to enroll in online courses. Program-related factors influence course-taking patterns as well, with adult learners enrolled in more advanced degrees more likely to enroll in online courses while those enrolled in business programs have the highest probability of taking online courses. Certain adult learner motivations affect the enrollment preferences of adult learners: adult learners who are pursuing a promotion or seeking a post-secondary credential for personal fulfillment are most likely to enroll in online programs, whereas those who are seeking retraining after losing a job are more likely to take in-person classes.

Some of these findings are consistent with what we might expect: it appears that adult learners with significant demands on their time (through employment and family obligations) are more likely to opt for online courses and their concomitant flexibility. Similarly, adult learners seeking a promotion with their current employer may be more likely to opt for online programs due to the demands of their current jobs. Those seeking post-secondary credentials for reasons of personal fulfillment may be doing so at their leisure and with the flexibility and accessibility afforded by online courses. It is also perhaps not surprising that adult learners seeking an additional post-secondary credential, not an initial one, are more likely to opt for online programs. We know that adult learner enrollment in online programs is increasing (Garrett, 2018) and that women make up a disproportionate number of adult learners seeking post-secondary credentials. The finding that women are more likely than men to enroll in online courses is consistent with that pattern. The age finding is inconsistent with prior research's emphasis on the technological challenges inherent in online programs (Chang & Kang, 2016; Dzakiria, 2012; OECD, 2020). These results expand our understanding of selection into online post-secondary programs by providing empirical evidence for personal, program, and motivational factors that influence adult learners' course-taking preferences, providing a rich descriptive picture of adult learners.

There is one finding; however, that is significant and does not align with the current assumption. Younger adult learners prefer in-class learning; specifically, younger adults in our sample were less likely than older adult learners to enroll in online courses.

Limitations

Many reasons exist for adult students to be motivated to enroll in post-secondary programs and this study fails to account for all of them. For example, pre-college characteristics were unaccounted for, and thus students' K12 experience could likely impact their self-efficacy, institutional commitment, goal commitment, and motivational tendencies. Also, the data set was mainly comprised of White, female participants from the Midwest that may not be representative of all adult learners. Moreover, while the survey attempted to collect income data, a high incompletion rate did not permit income to be included in the MLR model. These factors reduce the generalizability to more diverse populations.

Implications and conclusions

From a teaching and learning perspective, according to Mackeracher (2005), situated cognition considers the nature of learning and the design of learning experiences based on the notion that all knowledge is contextually situated. Considering the patterns presented here between adult learner characteristics and whether they enroll in all classroom, hybrid or all online, an opportunity exists to tailor heutagogical approaches more carefully to adult learners. Heutagogy is an opportunity for the learner to take responsibility for direct personal learning, engaged in knowledge creation and sustainability (Hase & Kenyon, 2000). As students move toward heutagogy, theory suggests that they will discover their strategies for learning and develop the confidence to share their knowledge and understanding of key concepts (Hase & Kenyon, 2000). As such, instructors can create opportunities for heutagogical practices in their curriculum to promote knowledge sharing in an online environment. In short, institutional responsiveness and encouragement play significant roles in helping adult learners stay enrolled and graduate.

Being knowledgeable about the characteristics of adult learners and their preferences for certain types of post-secondary options propel curriculum and instruction forward to promote adult learner persistence. Awareness of internal and external barriers to persistence, such as work/school conflict can address persistence issues early. Bergman et al. (2014) caution that students who feel more strongly that there exists conflict between work and classes face approximately 78% higher risk of dropping out. Minimizing conflict between work and classes, whether real or perceived, may be one of the most impactful ways to address the effects of external environmental variables. Identifying apprenticeship opportunities, promoting collaboration among peers, providing coaches and mentors who observe learners completing tasks, and endorsing multiple opportunities to engage in learning activities could also support adult learner ways of knowing and promote adult learner persistence (Mackeracher, 2005). Ultimately, finding ways to support this growing student body with varying and complex needs is challenging, but enhancing student persistence starts with meeting the adult learners' needs.

These exploratory findings presented here empirically confirm a number of commonly held beliefs about adult learning. In contrast to common assumptions, younger adults in our sample were *less* likely compared to older adult learners to enroll in online courses. Adult learners who are married and living with a partner prefer online classes, either hybrid or all online situations. Single adult learners and those enrolling full-time prefer all in-person classes while adult learners with young children at home or are enrolled part-time are more likely to take online classes. Understanding the motivational tendencies of adult learners (by degree type and academic program) has meaningful implications for teaching and learning. Results suggest that the reason adults pursue further education is predictive of their online course-taking preferences with those who seek a degree for advancement or to achieve personal fulfillment, primarily doing so online. Conversely, those who are laid off and need training are more likely to take in-person classes. Considering the demands for post-secondary credentials are only increasing, identifying and implementing changes to improve adult learner persistence and degree completion based on what we know about their course-taking preferences is not only doable, but necessary.

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