Competency-Based Education and Learner Self-Direction: Findings from an Exploratory Study

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Executive Summary

As competency-based education (CBE)—an alternative to traditional models of postsecondary education where learning is tied to mastery of competencies rather than grades and credit hours—becomes more prevalent in postsecondary education, it is important to understand learning capacities within a CBE program. In particular, because CBE programs often serve larger shares of adult students than traditional programs, understanding adult learning capacities in CBE programs is important. One element is adult students' desire for and capacity to manage self-directed learning (SDL), or "an intentional learning process that is created and evaluated by the learner" (International Society for Self-Directed Learning, 2020).

KEY FINDINGS

- Students who self-select into a CBE program have relatively high SDL capacity.
- Participation in a CBE program may positively impact students' capacity for SDL

A recent exploratory study supported by the National Research Collaborative on Postsecondary Competency-Based Education and Learning at the American Institutes for Research (AIR) investigated the capacity for students' SDL within a CBE program to cull insights into how a student-driven learning process can lead to changed outcomes. It hypothesized that learner self-direction may draw adults to CBE programs, develop as the student progresses through the program, and promote success in the CBE program.

This study identified two key findings relevant for further research within CBE:

- Students who self-select into a CBE program have relatively high SDL capacity.

- Participation in a CBE program may positively impact students' capacity for SDL.

These two findings are joined by a potential, though inconclusive, relationship identified between academic success and self-reported capacity for SDL.

Competency-Based Education

CBE is an alternative to the more traditional credit hours-based approach to postsecondary education. Instead of emphasizing "seat time"—the quantity of hours spent learning content—CBE focuses on the mastery of competencies needed to succeed in a professional setting. Because CBE deemphasizes the time spent learning, assessment of demonstrated mastery is required.

Many students who participate in CBE are 25 years or older (Kelchen, 2015; Mason & Parsons, 2019). The focus on assessment of mastery may appeal to adult learners and returning students because it can be more time-flexible than traditional credit-based programs. Rigorous assessment of demonstrated competencies is often used to grant credit for existing or prior learning, thereby recognizing the varied experiences many students may have gained outside of the postsecondary setting. In addition, some CBE programs integrate assessment to determine mastery in ways that align to and support the self-pacing that many adult learners require.

CBE is gaining further acceptance as an alternative form of instruction. The 2019 National Survey of Postsecondary Competency-Based Education reported that 89% of respondents are either implementing CBE or interested in doing so. However, most institutions are only just beginning to implement programs, with only 11% reporting one or more programs under way (Mason & Parsons, 2019).

WHAT IS CBE?

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Self-Directed Learning

Because of the rising prominence of CBE among adult learners, it can be useful for higher education practitioners to better understand an important component of adult education: SDL. The adult educator, Malcolm Knowles, first defined SDL in 1975 as "individuals [who] take the initiative with or without the help of other[s], to diagnose their learning needs, formulate learning goals, identify resources for learning, select and implement strategies, and evaluate learning outcomes."

The traditional instructional method of primary- and secondary-grade teachers has been to guide a classroom of students through a curriculum. Because of this, and the bulk structures of academic models, many adults were conditioned to be "obedient" learners in school environments even while they may regularly practice self-direction in personal and professional endeavors. Considering this, the need to develop SDL behavior among adult learners can be an important strategy for combating the passive learning habits cultivated during youth (Center for Inspired Teaching, 2018; Dewitt, 2016; Ecker, 2020; Harvey, 2000).

There are key concepts that have been associated with SDL that can potentially be supported or motivated by practitioners through CBE program design. These concepts have been identified as time management, goal setting, initiative, persistence, autonomy, curiosity, confidence, and desire (Khiat, 2017; Ponton & Carr, 2000). These qualities lend themselves to the experience of CBE, which typically delivers a curriculum that allows individuals to manage the pacing and completion of their own learning (Holder, 2007; Karimi, 2016; Kim et al., 2014; Schrum, 2002; Shea & Bidjerano, 2010; Song et al., 2004).

WHAT IS SELF-DIRECTED LEARNING?

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Self-Directed Learning in a CBE Program

Considering the importance of SDL while navigating a CBE program, and the rising prominence (and potential benefits) of CBE among the adult learner community, the study team sought to understand if aspects of SDL develop over the course of a CBE program and if self-direction supports academic achievement.

The study team examined a sample of 93 newly enrolled students at a private, for-profit university that offered multiple CBE programs (see appendix for sample details). These programs were primarily offered online and were course-based, with multiple competencies examined. In addition, students had some ability to self-pace through courses but were limited by defined semester dates to register for classes. To move through a course, students took multiple authentic assessments by performing real-world tasks.

To measure students' self-reported characteristics, an adapted survey was used that asked students to rate their own capacity to self-direct their learning on a 4-point scale among seven identified dimensions associated with SDL (Khiat, 2015).

This survey was completed online at program entry and again at the completion of the first 12-week academic term. Combined with students' course completion outcomes, this survey allowed AIR researchers to identify potential variation

SELF-DIRECTED LEARNING IN CBE: SURVEY DIMENSIONS

1. **Planning learning**: Preparing for participation in a learning project by establishing short- and long-term milestones, identifying and defining learning projects to accomplish these milestones, and determining project-specific goals and benchmarks.

2. **Identifying learning resources**: Identifying resources, including human, text, technologies, activities, and other resources, that the learner uses to facilitate learning.

3. **Setting learning goals**: Establishing personal and professional goals related to a learning project identified by the learner.

4. **Managing stress**: Implementing strategies to limit anxiety and maximize learning.

5. **Comprehension competence**: Understanding and critically engaging with learning materials to achieve course objectives, demonstrate competency, and meet personal learning goals.

6. **Learning management system (MS)/Technical proficiency**: Navigating the LMS, utilizing the associated tools, and operating the technology required to be successful in computer-mediated instruction.

7. **Learning proficiency**: Engaging in both synchronous and asynchronous class experiences through appropriate participation and interaction with professors, peers, and learning activities.

among participants' perception of their SDL capacity that may be associated with their CBE program. Although there could be other explanations for this potential variation, the results merit further research and discussion on SDL within CBE.

Findings

There are three key takeaways from this study, all with potential implications for higher education practitioners:

1. Students who self-select into a CBE program at the institution studied have high SDL capacity, particularly for identifying learning resources, setting learning goals, and managing stress.

2. Participation in a CBE program may have a relationship with students' SDL capacity.

3. There may be a positive relationship between a student's SDL capacity and academic success in a CBE program.

The first finding, that students who self-selected into a CBE program had a high capacity for SDL, was found through a descriptive look at the self-reported scores by students participating in a CBE program. The average score given among all seven dimensions of SDL was above 3, with the top scores *identifying learning resources*; *setting learning goals*; and *managing stress*, at 3.48, 3.51, and 3.38, respectively.

The second finding, the impact of participation in a CBE program on SDL, emerged through an analysis of changes in survey scores, both before and after the 12-week academic term. This analysis revealed positive and statistically significant changes in two of the seven dimensions of SDL: *comprehension competence* and *LMS/technical proficiency*. Students, on average, scored their capacity for these dimensions at higher levels after completing their CBE programs, at an increase of .26 (from 3.26 to 3.52) and .16 (from 3.25 to 3.41), respectively.

Another large change was a decrease in how students perceived their capacity for asynchronous learning proficiency, with the average score decreasing from 3.17 to 2.99, though this result was not statistically significant.[1] One possible explanation for this decrease, posited by the authors, was that students may have had an uninformed comprehension of their own learning competency in both synchronous and asynchronous learning before the program began. Consequently, after a completed semester, their self-reported scores may have adjusted for their new familiarity.

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[1] Only 44 students scored on this dimension in both the pre- and post-surveys, which could explain the lack of statistical significance instead of the size of the variation.

Last, we explored the potential for a correlation between a student's perception of their capacity for SDL and their academic success within a CBE program. To do this, we used credit completion as the measure of academic success through a ratio of attempted credits taken to credits completed; then compared those ratios with each student's SDL capacity scoring.

However, we encountered two key challenges when evaluating the potential correlations between these two variables that resulted in inconclusive results. First, there was little variation among participating students' credit completion ratios to make any useful comparison, with all of the students completing most of their credits. Second, the length of the study, one academic term, provided too few observations to produce strong correlations.

The inconclusiveness of the third finding highlights the need for further research on the topic of SDL. This study, which was exploratory in nature, was conducted with one cohort of students at one institution over one semester, resulting in a lower number of observations to make conclusive statistical correlations. Consequently, no generalizations on the relationship between SDL and credit success, or its utility to CBE, can be made without a larger study with a larger sample over a longer period of time

Recommendations and Insights

This study was conducted in the spring and fall of 2019, before the COVID-19 global pandemic affected the lives and work of students, teachers, and postsecondary education practitioners. However, the benefits of cultivating SDL has never been more salient because of how COVID-19 is forcing postsecondary institutions to change their delivery of instruction and services. Many are limiting the frequency of in-person interactions through reduced class sizes, reduced student services, and increased remote learning.

This dramatic shift of students from the classroom to the home necessitates a cultivation of self-direction by practitioners like never before. Therefore, based on the study's findings, the authors share three key takeaways that postsecondary practitioners, specifically within CBE programs, can consider when working to encourage SDL among their student population:

1. CBE program teams should identify the aspects of their program delivery that require SDL and communicate these with learners upon recruitment and program entry.

2. CBE program teams should devise strategies to help support and cultivate SDL throughout the program to foster positive behaviors to assist with retention and completion.

3. *Understanding learner characteristics in CBE models can allow for the development of tools and services to further attend to the individualized needs of CBE participants. CBE program*

teams should consider assessing the SDL capacity of incoming learners, both qualitatively and quantitatively, and developing supports accordingly.

References

Center for Inspired Teaching. (2018). The critical need for replacing compliance-based teaching with engagement-based teaching. *Inspired Teaching.* Retrieved from https://inspiredteaching.org/wp-content/uploads/white-paper-engagement-1.pdf

DeWitt, P. (2016). Student engagement: Is it authentic or compliant? *Education Week, Finding Common Ground* [Blog]. Retrieved from http://blogs.edweek.org/edweek/finding_common_ground/2016/04/student_engagement_is_it_authentic_or_compliant.html

Ecker, J. (2020, January 14). 6 Strategies to support the development of self-directed learners. *Voices from the Field*. Education Reimagined. Retrieved from https://education-reimagined.org/6-strategies-to-support-the-development-of-self-directed-learners/

Harvey, L. (2000). New realities: The relationship between higher education and employment. *Tertiary Education and Management, 6*(1), 3–17.

Holder, B. (2007). An investigation of hope, academics, environment, and motivation as predictors of persistence in higher education online programs. *The Internet and Higher Education, 10*(4), 245–260. Retrieved from http://anitacrawley.net/Resources/Articles/Holder.pdf

International Society for Self-Directed Learning. (2020). Self-directed learning. Retrieved from https://www.sdlglobal.com/about-us

Karimi, S. (2016, October). Do learners' characteristics matter? An exploration of mobile-learning adoption in self-directed learning. *Computers in Human Behavior, 63*, 769–776.

Kelchen, R. (2015). *The landscape of competency-based education: Enrollments, demographics, and affordability.* Center on Higher Education Reform, American Enterprise Institute. Retrieved from https://www.aei.org/wp-content/uploads/2015/04/Competency-based-education-landscape-Kelchen-2015.pdf

Khiat, H. (2015). Measuring self-directed learning: A diagnostic tool for adult learners. *Journal of University Teaching and Learning Practice, 12*(2), 2.

Khiat, H. (2017). Academic performance and the practice of self-directed learning: The adult student perspective. *Journal of Further and Higher Education, 41*(1), 44–59.

Kim, R., Olfman, L., Ryan, T., & Eryilmaz, E. (2014). Leveraging a personalized system to improve self-directed learning in online educational environments. *Computers & Education, 70*(4), 150–160.

Mason, J., & Parsons, K. (2019). *State of the field: Findings from the 2019 National Survey of Postsecondary Competency-Based Education (NSPCBE).* Washington, DC: American Institutes for Research.

Ponton, M. K., & Carr, P. B. (2000). Understanding and promoting autonomy in self-directed learning. *Current Research in Social Psychology, 5*(19). Retrieved from https://crisp.org.uiowa.edu/sites/crisp.org.uiowa.edu/files/2020-04/5.19.pdf

Schrum, L. (2002). Dimensions and strategies for online success: Voices from experienced educators. *Journal of Asynchronous Learning Networks, 6*(1), 57–67.

Shea, P., & Bidjerano, T. (2010). Learning presence: Towards a theory of self-efficacy, self-regulation, and the development of communities of inquiry in online and blended learning environments. *Computers and Education, 55*(4), 1721–1731.

Song, L., Singleton, E. S., Hill, J. R., & Koh, M. H. (2004). Improving online learning: Student perceptions of useful and challenging characteristics. *The Internet and Higher Education, 7*(1), 59–70.

Appendix: Study Methods and Sample

To understand students' self-directed learning (SDL) capacity and its relationship to participation in competency-based education (CBE) programs, the study team surveyed students enrolled in CBE programs at a private, for-profit postsecondary institution in the United States with primarily online course offerings. CBE offerings at this institution are course based, with each course comprising multiple competencies. The researchers examined survey outcomes related to key dimensions of SDL to measure students' SDL capacity through an online survey administered at program entry and again after completion of one "unit of content." Given the variation in CBE program implementation, the definition of a *unit of content* naturally varies across institutions (e.g., subscription period, academic term); the current study measured unit of content as a 12-week academic term that is still tied to the credit-hour terminology.

The survey instrument, adapted from a validated survey of SDL developed for adult learners in online course settings (Khiat, 2015), includes items designed to measure seven dimensions of SDL:

1. **Planning learning:** Preparing for participation in a learning project by establishing short- and long-term milestones, identifying and defining learning projects to accomplish these milestones, and determining project-specific goals and benchmarks.

2. **Identifying learning resources:** Identifying resources, including human, text, technologies, activities, and other resources, that the learner uses to facilitate learning.

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In addition to collecting the survey data for this study, the study team collected institutional data on student demographic characteristics and credit completion and success. These data allowed for the consideration of differences in outcomes across different program types and

student characteristics and for understanding what, if any, relationship exists between SDL capacity and credit completion and success outcomes. The researchers conducted analyses in spring and fall 2019, including descriptive and correlational analyses focused on understanding characteristics of SDL and potential correlations between self-direction and credit completion and success.

The current sample includes 93 newly enrolled students from one private, for-profit postsecondary institution that offers primarily online CBE programs. These are students who completed the survey at the time of entry and for whom demographic and credit success data were available. The majority of the existing sample are women (74%) and adults over the age of 25 (83%). Of these students, 12% are Black, 12% are Latinx, and 53% are White. In addition, 37% of students had some college credit but no degree, 28% had an associate degree, and 9% had a bachelor's degree; 70% of students were eligible to receive a Pell Grant. The sample includes students from several disciplines—primarily business and education and smaller numbers from health sciences and technology. Table A1 presents descriptive statistics for student characteristics in more detail. These characteristics of students surveyed mirror the common perception that CBE programs often serve adult students with prior college credit.

Table A1. Student Characteristics

Variable	Percent
Gender	
Male	26
Female	74
Age	
19 and younger	0
20–24	17
25–29	20
30–39	33
40–49	24
50 and older	5
Race/Ethnicity	
Black	12
Latinx	12
American Indian or Alaska Native	1
Asian	2
White	53
Two or more races	1
Not reported	19
Highest credential earned	
High school diploma	16
GED	1
Some college, but no credential	37
Certificate	3
Associate degree	28
Bachelor's degree	9
Graduate degree	1
Other	5
Pell Grant eligibility	
Eligible	70
Not eligible	30

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