Implications of Transactional Distance Theory for Online Competency-Based Education

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Competency-based education (CBE) has a long history, having been used for at least 30 years in vocational training (Garfolo & L'Huillier, 2016). With the increase in adult students using online education to earn credentials and enter or advance in career paths, some online programs are turning to CBE (Weise, 2014). Institutions using CBE in online programs must consider how the interaction made possible online will facilitate students' mastery of competencies, as well as how competencies, learning paths, and mastery will be determined. Transactional distance theory provides one way to think about these issues.

Overview of Competency-Based Education

CBE is designed to focus on teaching and assessing the knowledge and skills that students will need in the workplace (Garfolo & L'Huillier, 2016). First, the relevant competencies must be identified. Next, learning activities are designed to help students attain the competencies. As students progress through a class or program, their achievement of the competencies is assessed. Garfolo and L'Huillier (2016) explain that a distinguishing factor of CBE is that students' attainment of credentials depends entirely on attainment of competencies.

Overview of Transactional Distance Theory

Michael G. Moore's transactional distance theory concerns how two features of a course, dialogue and structure, relate to transactional distance, the psychological and communication gap that can be exacerbated by a distance education environment (Moore, 1993). According to Moore, when dialogue increases, transactional distance decreases. When structure increases, transactional distance increases. The student learning experience involves interplay between these factors and the autonomy of a given student (Moore in Bernath & Vidal, 2007).

Moore (1993) focused on transactional distance between teacher and learner; however, subsequent work by Chen (2001) identified four transactional distances: learner-instructor, learner-learner, learner-content, and learner-interface. Social constructivism and online adaptive learning highlight the importance of the learner-learner and learner-content relationships, respectively (Huang, 2000).

Viewing Online CBE Through the Lens of Transactional Distance Theory

When considering how to design an online CBE course, instructional designers can consider transactional distance theory's concepts of dialogue and structure. Student autonomy is, of course, an important factor as well, and the general characteristics of the student population should be taken into account. The current discussion, however, focuses exclusively on dialogue and structure.

Dialogue in Online CBE

Dialogue, in transactional distance theory, is interaction that is "purposeful, constructive, and valued by each party" (Moore, 1993, p. 24). It is interaction that helps improve student understanding. Since transactional distance represents a gap in communication, increasing dialogue should reduce that gap. One can consider various types of dialogue corresponding with the various transaction distances; this discussion addresses learner-instructor, learner-learner, and learner-content dialogue.

In online CBE, as in all online programs, the quantity of learner-instructor dialogue must be balanced with the availability of teachers, given the number of students. Ideally, though, substantial learner-instructor dialogue would take place. In addition to unstructured, conversational dialogue, another important type of learner-instructor dialogue is the student's submission of work and the teacher's response as formative and/or summative assessment. While

it might be possible for some competencies to be machine-assessed, this is certainly not possible in all cases, and learner-instructor interaction will help reduce transactional distance and increase learning.

CBE's focus on individual students' mastery of competencies may lead to reducing the role of learner-learner dialogue. When student progress is defined solely by mastery of competencies (Garfolo & L'Huillier, 2016), class discussions, if they take place, do not directly contribute to students' grades. If course designers believe that discussions will increase student success in a given course, a method other than grading must be devised to motivate students to participate. Hickey (2015) suggests one such method: make learner-learner interactions such as discussions a prerequisite for the learning activities that students use to demonstrate competencies.

The last type of dialogue under consideration is between learner and content. Online platforms make it possible for this type of interaction to take place in innovative ways. Content can be adaptive, changing based on student input to the system (Brusilovsky & Peylo, 2003). This interaction is one way to reduce learner-content transactional distance in an online CBE course.

Overall, the designer of an online CBE course has a number of factors to consider when it comes to dialogue. Generally, learner-instructor dialogue is regarded favorably from a pedagogical perspective; however, the need for scalability in distance education can sometimes prohibit high levels of such dialogue. When it comes to learner-learner dialogue, course designers must consider its value in a particular course and, to the extent that it is deemed valuable, how students will be motivated to engage with their fellow students, particularly if that engagement is not directly assessed. Finally, online implementation of CBE makes way for

increased learner-content dialogue that may reduce transactional distance and improve student outcomes.

Structure Versus Individualization in Online CBE

In the context of transactional distance theory, structure refers to elements of course design that express "the rigidity or flexibility of the programme's educational objectives, teaching strategies, and evaluation methods" (Moore, 1993, p. 26). Its counterpoint is capacity for individualization. In a course with high structure, the goals, learning activities, and assessment methods are predetermined and the same for all students. In a course with the potential for individualization, one or more of these factors can be adjusted based on individual student needs or preferences.

If instructors make these adjustments (as opposed to students, or even computers, making them), then the adjustments are based on input from the students, whether through student performance or through students' statements of their needs or desires. When seen this way, individualization looks like a type of dialogue: students provide input to the instructor, and the instructor responds with adjustments to the student experience. This is one way of understanding the claim that individualization reflects lowered transactional distance, while structure – lack of capacity for individualization – is accompanied by relatively higher transactional distance. Crucially, though, low structure/high capacity for individualization is not enough to close a communication gap and promote learning. That individualization has to actually take place, whether through learner-instructor interaction, learner-content interaction (as in programmed adaptive learning), or students' autonomous control of their own learning. Without it, increased structure is a necessary student support.

Applying the issue of structure versus individualization to CBE, we can ask (1) how required competencies are identified, (2) how learning activities for attaining competencies are selected, and (3) how students' attainment of competencies is determined. A common reason for taking a CBE approach is to ensure that students have the skills required by employers in their chosen field (Garfolo & L'Huillier, 2016). This makes it important that the needs of employers are taken into account in identifying competencies. Generally, this is done as part of program or course design, making the array of competencies a structured part of a program/course. While individualization of competencies based on student goals is imaginable, that approach could reduce the value of the program as perceived by employers, who would not be able to count on all students from a given program having attained particular competencies.

The issue of how students attain competencies is where there is greatest possibility for individualization in an online CBE course. Online courses allow for a high degree of structure; it is possible for the choice, sequencing, and pace of learning activities to be entirely predetermined. However, given the capacity for dialogue through online conferencing as well as other modes of interaction, a less structured course with individualized paths for attaining competencies is also possible. Jiang, Parent, and Easmond (2006) describe one such approach at Western Governor's University. While such an approach should reduce transactional distance, the educational institution must consider the financial and resource costs of this choice, and the possible loss of economies of scale.

Finally, we can consider how students' attainment of competencies is determined. As with the selection of the competencies, high structure in the form of a single set of standards applied by teachers lends credibility to the program in the eyes of employers. Therefore, if CBE is being implemented to improve students' marketability as potential employees, it is not

advisable to individualize this aspect of a program/course. (Cf. Deloi's (2008) description of a program in which students self-assess their competency).

Conclusion

According to transactional distance theory, the psychological and communication gap in learning is smallest when there is a high level of dialogue and a low level of structure. CBE, by nature, is supported by a certain level of structure to ensure students have attained a set collection of competencies according to a given standard. However, to the extent allowed by institutional resources, the path to attaining competencies can be individualized. Implementing CBE online allows for various types of dialogue, but CBE's focus on assessing students' individual attainment of competencies might serve as a disincentive for students to engage in learner-learner dialogue. Instructional designers must consider how students will be motivated to engage in dialogue with other learners when necessary and how learner-instructor and learner-content dialogue can be implemented.

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