THE DEVELOPMENT OF THE COHORT BLOCK PEDAGOGICAL DESIGN MODEL AND
ITS APPLICATION IN ASYNCHRONOUS ONLINE COURSES

by

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ABSTRACT

THE DEVELOPMENT OF THE COHORT BLOCK PEDAGOGICAL DESIGN MODEL AND ITS APPLICATION IN ASYNCHRONOUS ONLINE COURSES

Recent literature suggests that large asynchronous online courses have relatively high rates of attrition and loss of student interest than do similar courses offered in smaller groups. The purpose of this research paper was to investigate the problem and develop an asynchronous online pedagogical model that could address issues without sacrificing social presence, cognitive presence, and teaching presence. The resulting model is the Cohort Block Pedagogical Design (CBPD). This research paper explores the application and feasibility of the model in small, large, and very large asynchronous online classroom settings. Suggested quantitative and qualitative testing of the model is proposed through a mixed-methods study. The quantitative component of the study is a quasi-experimental nonequivalent group design used to compare and analyze student perceptions via an instrument based upon the Community of Inquiry conceptual framework. The intervention is the CBPD model. The findings of this study may determine whether or not the CBPD is a viable online pedagogical design for addressing attrition and student-interest issues with regard to asynchronous online courses.
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The Development of the Cohort Block Pedagogical Design Model
and Its Application in Postsecondary Asynchronous Online Courses

With the rapid growth of asynchronous online-delivered courses on many university and college campuses, many of the problems associated with this delivery method have yet to be adequately addressed and resolved (Meyers, 2006; Palloff & Pratt, 2007). Although the viability and validity of asynchronous online-delivered instruction have been substantiated and supported by the results of many empirical studies (Koory, 2003; Ladyshewsky, 2004; Meyer, 2003; Oblinger & Hawkins, 2006; Price & Hossfeld, 2007), there are still many questions surrounding instructional practices, instructional designs, faculty and student concerns, as well as efficiently reconciling the costs of asynchronous online instruction with efficacious online pedagogy (Rumble, 2001; Meyers, 2006). Student attrition in online courses is often a problem at many secondary institutions, especially in asynchronous online courses with large class sizes and relatively little student engagement with peers or instructors/facilitators (Saba, 2005). By the same token, small online classes that feature greater student social presence, student cognitive presence, and teaching presence are often offered at premium tuition rates (Arbaugh & Duray, 2002) and can become cost-prohibitive to many students.

The challenge, therefore, was to develop an online pedagogy or instructional design model that can adequately do the following: (1) address cost-effectiveness, (2) address student attrition, (3) foster the development of student-to-student and instructor-to-student social presence, (4) foster the development of instructor-to-student teaching presence, (5) and foster the development of student cognitive presence. The result of
these considerations was the development of the Cohort Block Pedagogical Design Model.

**General Method**

**Developmental Research and Instructional Design and Development**

According to Richey, Klein, and Nelson (2004), developmental research can be divided into two distinct types. The first type (Type I) has an emphasis on program design, development, and/or evaluation projects. The focus is knowledge gained from developing the product and understanding its use through analysis. The second type of developmental research (Type II) is aimed more at the "...design, development, or evaluation processes, tools, or models" (p.1103). The basic product is a description of a new design, its development, the associated evaluation procedures, and the circumstances in which the model would be used. In short, Type I developmental research leads to context-specific conclusions, and Type II research points to generalized conclusions (Richey, Klein, & Nelson).

The developmental research associated with the Cohort Block Pedagogical Design model that is presented herein represents both types of research. For example, Type I developmental research is implemented by applying the CBPD model to an asynchronous online environment, developing a study and methodology for measuring the efficacy of the model in specific contexts, and drawing context-specific conclusions from the results of the study.

Type II developmental research was conducted through the design of the CBPD model. This was done by (1) analyzing the general problems of student retention and cost efficiency in asynchronous online learning environments, (2) learning and understanding
a comprehensive theoretical and conceptual framework that operated within a asynchronous learning environment through a thorough review of the literature, and (3) designing a model that took into account the limitations of the asynchronous online learning environment and also addressed the stated problems.

Specific Research Problem

Larger asynchronous online class sizes have a negative relationship to student course satisfaction and learning yet are more cost-effective for postsecondary institutions to conduct than are smaller classes (Arbaugh & Duray, 2002; Meyer, 2006). Can the application of the Cohort Block Pedagogical Design (CBPD) model in large asynchronous online classes improve social presence, student cognitive presence, and teaching presence while maintaining course cost-effectiveness at postsecondary institutions?

Research Questions

• Do students in CBPD courses perceive a greater sense of social presence than students in non-CBPD courses?

• Do students in CBPD courses perceive a greater sense of cognitive presence than students in non-CBPD courses?

• Do students in CBPD courses perceive a greater sense of teaching presence than students in non-CBPD courses?

• Do teachers perceive a greater degree of social presence, cognitive presence, and teaching presence with students when applying the CBPD model?
• Does implementation of the CBPD model in asynchronous online courses positively correlate to reduced student attrition when compared to non-CBPD model asynchronous online courses of similar class size?

**Significance**

The CBPD model has the potential of providing a cost-effective method to facilitate large asynchronous online classes while maintaining high levels of social presence, teaching presence, and cognitive presence. Specifically, if implementation of the CBPD model is determined to reduce the negative relationship between (1) larger asynchronous online class sizes and (2) course satisfaction and learning, then college and university administrations may have a viable method for implementing and maintaining better-quality asynchronous online programs without sacrificing profitability.

**Purpose**

The primary purpose of developing the CBPD model was to find a cost-effective way to reduce student attrition and retention in asynchronous online courses. The secondary purpose was to find a way to improve student social presence, cognitive presence, and teaching presence while maintaining the administrative cost-effectiveness of larger asynchronous online class sizes.

**Literature Review**

**Historical Foundations of Distance Education**

The exact time and place where distance education first began is not entirely clear. Rumble (2001) claims that distance education began in England in 1840 while a group of scholars state that it began in Sweden in 1833 with a newspaper advertisement offering potential students to study "composition through the medium of the post"
(Simonson, Smaldinino, Albright, & Zvacek, 2003). However, with regard to the beginning of distance education in the United States, the general consensus is that distance education began in 1873 (Simonson et al., 2003; Sumner, 2000; Watkins, 1991). At that time Anna Eliot Ticknor established the Society to Encourage Studies at Home (SESH). The thrust of Ticknor's effort was aimed at providing educational opportunities for women to whom otherwise had very little hope in receiving formal education (Simonson et al., 2003; The Ticknor Society, 2009). Under Ticknor's 24-year tenure as the director of SESH, over 10,000 people (mostly women) were served by this distance-education society (Simonson et al., 2003).

With the advent of many social and technological changes in U.S. society since Ticknor began her work with SESH, distance education has come to take on many different forms as it has continued to develop over time. Although social changes in American society have lessened education of women as the driving force behind distance education, one aspect that has remained constant is that distance education is still primarily marketed to individuals who have difficulty pursuing an education in a traditional face-to-face setting (Holmberg, 1995). Time-and-place challenges brought about by occupational, social, and situational circumstances have historically provided a market for distance education programs to thrive. Such programs have provided many individuals opportunities for professional development, skill and knowledge attainment, and the pursuit of an education in a self-directed manner (Holmberg).

With the help of modern technology and the continued changes in American society, reasons learners enroll in distance education programs expanded. Modern modes of distance-education instruction now address the educational needs and desires of a
broader base of learners and do so with a much broader array of distance-education delivery methods. For example, in addition to the distance-education mode of correspondence study, distance education delivery now includes programming via radio and television transmission, live two-way video conferencing, synchronous and asynchronous online delivery, as well as other distance-education delivery modes (Shelton & Saltsman, 2003).

**Conceptual and Theoretical Framework**

In this section several theories are presented that underpin the basic concepts that guided the development of the Cohort Block Pedagogical Design Model. The theoretical framework which emerged from the literature provided a map for understanding which components to include in developing the CBPD model and for understanding how to implement the model in an online asynchronous classroom environment. The parts or components that comprise the CBPD model are presented here in juxtaposition to the sections of the conceptual and theoretical framework from which they emerge.

**Virtual community of practice and the community of inquiry model.** From a very basic level of social and cognitive interaction, that of small children, Vygotsky (1978) observed that the most significant moment of intellectual development occurred "...when speech and practical activity...converge" (p. 24). It is this same convergence or interaction that occurs in an adult virtual learning environment or virtual community of practice, often through the scaffolding effect described by Vygotsky. For example, Barab, MaKinster, and Scheckler (2003) define a community of practice as "...a persistent, sustained social network of individuals who share and develop an overlapping knowledge base, set of beliefs, values, history and experiences focused on a common practice and/or
mutual enterprise” (p. 238). Social and cognitive interaction and shared learning are at the heart of what Vygotsky observed and what Barab et al. defined.

The basic composition of an online community is electronic or virtual airspace created by an administrative authority (see Figure 1). That is the ether from which online teaching and learning exist. According to Palloff and Pratt (2007), the one important process that occurs within the virtual community for learning to take place is interaction. Those interactions occur between students and students, and students and teachers. From the collaboration of this virtual community of individuals and groups, "...a learning community through which knowledge is imparted and meaning is co-created sets the stage for successful learning outcomes" (p. 4).

**Figure 1.** A representation of a virtual community established by an administrative authority such as a faculty member or a university administrator. Copyright 2012 by Bruce M. Doney.
In terms of the characteristics of a community of practice, Barab and Duffy (2000) listed four characteristics: (1) shared knowledge, values, and beliefs; (2) overlapping histories among members; (3) mutual interdependence; and (4) mechanisms for reproduction. Barab (2002) later added several more characteristics: (5) a common practice and/or mutual enterprise; (6) opportunities for interactions; (7) meaningful relationships; and (8) respect for diverse perspectives and minority views. Along the same vein of thought, Moore and Kearsley (2005) suggest a systems-theory approach to distance education due to the complexity of the interactions between the system variables: "A distance education system consists of all the component processes that operate when teaching and learning at a distance occurs. It includes learning, teaching, communication, design, and management" (p.9). At a very basic level of their conceptual model, Moore and Kearsley describe the three types of interaction that are necessary for distance education to be successful: (1) learner-to-learner, (2) learner-to-content, and (3) learner-to-instructor/teacher.

These same characteristics or constructs are reflected in the Community of Inquiry (CoI) theory model (see Figure 2) developed by Garrison, Anderson, and Archer (2000). The CoI constructs are social presence, cognitive presence, and teaching presence. Social presence relates very closely with Moore and Kearsley's (2005) learner-to-learner interaction component. Learner-to-content interaction dovetails with cognitive presence, and learner-to-instructor interaction is strongly associated with teaching presence.

**Community membership, function, and outcomes.** According to Palloff and Pratt (2007), all community-based online learning is comprised of three basic elements:
people, purpose, and process. The people are the facilitators and the learners. They express themselves through social presence and teaching presence and exhibit distinct 

![Community of Inquiry Diagram](image)

*Figure 2.* The Community of Inquiry Model showing its three constructs: (1) Social Presence, (2) Cognitive Presence, and (3) Teaching Presence. Used with permission from D. R. Garrison.

roles. For example, a facilitator has three primary duties. The first duty is for the facilitator to model and develop the social presence of the community. This is achieved through guidance and course facilitation. The second duty is to establish the shared goals of the community by establishing rules and guidelines for the community and by
empowering learners to actively participate in the community-building process. The third duty is to establish the purpose of the community through mutual agreement with the learners and with regard to practical considerations. The outcomes of the online learning community (see Figure 3) from Palloff and Pratt's perspective are transformational and reflective in nature and are driven by social constructivism. Ideally, outcomes should also result in co-created knowledge and meaning for the entire community.

![Virtual Community of Practice Diagram](https://via.placeholder.com/150)

*Figure 3. A representation of the virtual community of practice components: (1) learners and facilitators, (2) processes, and (3) shared outcomes. Copyright 2012 by Bruce M. Doney.*

The online virtual-learning community members, both learners and facilitators, bring with them to the community existing skills, training, and knowledge (Palloff & Pratt, 2007). If the community is functioning well, then the outcomes of the community should exhibit a sense of community, social presence, and shared knowledge (see Figure 4).
Non-process risks to community outcomes. There are several potential pre-existing characteristics of learner-members that can negatively influence the outcomes of those respective members. For example, the results of a study identifying student characteristics related to students' preferences regarding online courses indicated that many students who choose to take online courses are at high-risk for non-completion (Pontes, Hasit, Pontes, Lewis, & Siefring, 2010). Competing demands in their personal...
lives such as family, work, and time make the option of taking an online course appealing for these students, yet these same factors also place these students at high-risk for not attaining successfully outcomes from within a virtual online community of practice. Therefore, non-completion and retention are potential issues for many students taking online classes. According to Pontes et al. (2010), another potential risk to the outcomes of learner-members of the virtual online community is that many student have pre-existing negative attitudes toward taking online courses. Clay, Rowland, and Packard (2008) discovered through qualitative interviews of students (N=57) who withdrew from online courses that they did so because they did not have either adequate course orientation or the necessary computer skills. Therefore, the processes within the virtual community must be designed to overcome these additional obstacles to achieving successful community outcomes.

**Process risks to community outcomes.** Palloff and Pratt (2007) suggest that transformational/reflective learning through social presence and collaboration within a constructivist context is key to achieving successful outcomes. Conversely, process-related risk factors that would inhibit successful outcomes include community-member isolation such as lack of teaching presence and lack of peer-to-peer interaction (Mann, 2005; Wanstreet, 2006). Furthermore, collaborative learning is found to be an important catalyst to building knowledge within an online-learning environment (Beuchot & Bullen, 2005; Bennett & Monds, 2008; Dennen, 2005; Hurd, 2006; Jahng, Nielsen, & Chan, 2010; Meyer, 2007; Rhode, 2009; Scardamalia & Bereiter, 1994; Stodel, Thompson, and McaDonald, 2006; Wighting, Liu, & Rovai, 2008).
Anderson, Rourke, Garrison, and Archer (2001) define teaching presence as "...the design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes" (p.5). The design and organization of an online community of learners is paramount to achieving a successful online community. With designing the online community, teachers are forced to understand the processes of structure, interaction, and evaluation for course development. In addition to design and organization considerations, teachers must also decide on course facilitation, consider aspects such as maintaining student interest and motivation, and facilitating engagement and learning through discussion and learning activities. Of course, the primary role of the instructor is course instruction and guidance involving the subject matter (Anderson et al.). Some theorists argue that there is a distinction between the online facilitator and the course content provider (Mason & Romiszowski, 1996); however, Garrison counters that self-directed learners often need teacher support to augment their desire for independence (Garrison, 1988).

For example, lack of teaching presence also influences student retention within the online community and poses a real risk. Clay, Rowland, and Packard (2008) conducted a qualitative study in which they contacted 180 students and interviewed 57 by telephone who withdrew from an online course in the Fall semester of 2006. The online program had a retention rate at the time of approximately 70% during the first phase of the study. Over half of the students who were interviewed indicated that lack of teacher involvement was a primary reason withdrawing from their respective online course. For the second phase of the study which took place during the Summer 2007 online program, intervention measures such as (1) redundant communication from online instructors,
targeted advisement, and (3) class-augmented social networking were implemented. Consequently, for the third phase of the study, online retention rates measured for the Summer 2007 semester to over 80%, the highest ever in the program (Clay, Rowland, & Packard).

Self-efficacy, the conviction by an individual to intrinsically perform a given task at a designated level (Bandura, 1997), is an important concept with regard to successful outcomes within an online learning community (Puzziferro, 2008; Rhode, 2009). However, collaborative learning can play a key role in augmenting the self-efficacy that many online students need in order to be successful. Rhode, however, found that some online students were willing to forgo peer-to-peer interaction in order to preserve their flexibility of self-paced online learning and posited that such a practice posed an additional risk to retention in online courses.

In addition to teaching presence, social presence and learner-to-learner interaction are deemed to be important considerations when designing an asynchronous online community. As Vygotsky (1978) observed in school-age children in the 1920s and 1930s, peer-to-peer interaction creates shared knowledge for the entire learning community. The same concept holds true for asynchronous online learning communities. For example, in an action research study conducted by Misanchuk & Anderson (2001), the researchers found that scaffolding activities in virtual learning communities are robust and richer when a course developer focuses on developing three general types (or levels) of communication interactions: communication, cooperation, and collaboration.

Rourke, Anderson, Garrison, and Archer (2001) define the construct of social presence as "...the ability of learners to project themselves socially and emotionally in a
community of inquiry" (p.53). The researchers further state that the function of the social presence construct is to support the learning of cognitive and affective objectives. Within a community of learners, social presence supports and sustains cognitive goals and objectives through its ability to initiate and support critical thinking. Social presence causes group interactions to become appealing, engaging, and intrinsically rewarding (Rourke et al.).

One of the early challenges that researchers encountered when studying social presence within the context of asynchronous online learning was how to quantitatively measure and assess social presence (Rourke et al., 2001). This left a gap in the literature of scholarly study supported by empirical research. Garrison, Anderson, and Archer (2000) developed the Community of Inquiry survey instrument (see Appendix A) in order to provide a means of quantifying social presence in online learning, as well as a means to quantify cognitive presence and teaching presence. Before the development of the CoI survey instrument, research was limited to qualitatively-based content analysis involving the coding of transcripts of online course interactions (Rourke et al.).

There are many case studies and student accounts that point to lack of social presence as a serious risk to a successful online community (Alant & Dada, 2005; Beuchot & Bullen, 2005; Chen, Wang, & Ou, 2003; Fung, 2004; Harris, 2006; Kehrwald, 2008; Liu, 2008; Lizzio & Wilson, 2005; McAlpine, 2000; Meyer, Bruwelheide, & Poulin, 2006; Roberts, Lowry, Cheney, & Hightower, 2006; Shea & Bidjerano, 2009; Smith, 2005; Wergerif, 1998). Wergerif reported that in interviews with students in online courses, student success was dependent upon the ability of students to cross over from feeling like outsiders to being a part of the online community. In a qualitative study
with 23 (N = 23) online graduate students enrolled in a Masters of Education program at a Canadian university, Stodel, Thompson, and MacDonald (2006) interviewed the student subjects and inquired what they missed in online courses when they compared them to face-to-face courses. One of the top five themes that emerged from the study was the need for "robustness in online dialogue" (p.5). A phenomenological study conducted by Liu revealed that student interactions support students staying engaged in their coursework, and the learner-to-learner interactions also played a large role in how students felt about distance education. Mann (2005), however, posits that the focus with regard to social presence should not be to engender a sense of community or belonging but rather to support "...dialogue within the learning community..." (p.43). Class size was also found to be linked to social presence in studies conducted by Akyol, Garrison, and Ozden (2009) and by Driver (2002). Smaller online groups or class sizes evoked strong social-presence responses from students in each of the studies. Furthermore, Garrison (2011) states that strong social presence leads to strong cognitive presence in online communities, so it stands to reason that a lack of social presence leads to diminished cognitive presence as well.

**Learning theories associated with distance education.** One of the major theories associated with online learning is constructivism which Driscoll (2000) defines as a change in a learner's performance based upon that individual's experiences and interaction with the world. One of the criticisms and perceived limitations of constructivism is that it focuses upon the individual and not the learning-community as a whole (Siemens, 2005). Siemens posits that technology has pushed the traditional learning theories to a point that they no longer function or address the needs of today's
learners. The alternative theory that Siemens has forwarded is connectivism. Connectivism is based upon the following principles:

- Learning and knowledge rests in diversity of opinions.
- Learning is a process of connecting specialized nodes or information sources.
- Learning may reside in non-human appliances.
- Capacity to know more is more critical than what currently is known.
- Nurturing and maintaining connections is needed to facilitate continual learning.
- Ability to see connections between fields, ideas, and concepts is a core skill.
- Currency (accurate, up-to-date knowledge) is the intent of all connectivist learning activities.
- Decision-making is itself a learning process (Siemens, 2005).

According to Siemens, connectivism addresses the major issues of a dynamic learning process including the design of learning environments.

**Class size as a consideration.** The concept of what constitutes an ideal class size varies considerably depending on the source one consults. Tomei (2006) stated that the ideal online class size is comprised of 12 students. Fisher, Phelps, and Ellis (2000) suggested that 25 students provided the optimal environment for student and instructor satisfaction. These researchers further stated that "large groups are better suited for conferences or discussions that aim at exploring and collection; small groups of three to five are more effective in joint projects in order to facilitate coordination" (p.210). The authors did not state whether or not their claims were based upon anecdotal observation or empirical research. Palloff and Pratt (2007) suggest that class or group size should be
manageable. They also recommend that "creativity on the part of the instructor is necessary to promote the best use of group size" (p.82).

Institutional dilemma with asynchronous online administration. One of the major concerns from administrators of high-education institutions that offer online courses is that the courses can be expensive (Meyer, 2006; Shelton & Saltsman, 2003). For example, a study conducted by Arbaugh and Duray (2002) revealed that larger online classes are negatively associated with learning and course satisfaction. However, Palloff and Pratt (2007) state that "although cost efficiency is a concern, it should not be the driving influence in establishing class size" (p.82). This situation can leave higher-education institutions in a conundrum. Larger online classes may yield unacceptably high attrition, and smaller online classes may be cost prohibitive in terms of tuition for students or insufficient course revenue for colleges and universities (Meyer, 2006).

Model Design and Development

This section describes the process of designing and developing the Cohort Block Pedagogical design model. The concepts applied herein were drawn from the literature review.

The challenge in designing an online pedagogical model became twofold: (1) creating a cost-efficient model that would neither justify an increase student tuition nor place an additional financial burden on a higher-education institution, and (2) keeping the focus on maintaining high levels of social presence, cognitive presence, and teaching presence. The resulting basic model is the Cohort Block (see Figure 5).
Since much of the literature linked small groups to increased social presence and cognitive presence in online learning communities, a model was designed that featured small groups of online student and a single facilitator or teacher. The CBPD model can be applied in a variety of asynchronous online learning environments regardless of initial class size (see Figure 6).

The design of the model allows for any size asynchronous online class to be segmented into a series of cohort blocks (see Figure 7). A system administrator or the course instructor can segment the Course Management System (CMS) software (e.g. Moodle, BlackBoard, etc.) so that the class is divided into a series of cohort blocks.

From the perspective of students in the class, they are in a small classroom with four or five peers and one instructor. This arrangement should allow for better scaffolding than larger classrooms, as well as increased social presence, cognitive presence, and teaching presence. From the instructor's perspective, the classroom is segmented into a
Figure 6. The CBPD model was designed be applied to any size virtual classroom.

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Figure 7. The CBPD model applied to a typical asynchronous online classroom. In the above configuration, a classroom of 25 students has been divided into five cohort blocks facilitated by the same teacher. Copyright 2012 by Bruce M. Doney.
series of identical-sized cohort blocks (see Figure 8). It is only the student who are different in each block. Much of the coursework and general instruction can be duplicated across all cohort blocks; however, each block will require independent instructor facilitation. One potential caveat is that the cohort-block arrangement may require more intense work for the instructor than a typical classroom. The potential payback; however, is that students are performing better, more satisfied with the online course, and not withdrawing.

The CBPD model also may also be applied in a very large online class such as would typical in size to a non-online freshman class being held at a lecture hall at a large college or university (see Figure 9). In such a scenario, a lead facilitator would be responsible for several facilitator assistants, such as graduate students, and the lead facilitator may also facilitate the residual cohort blocks that are not being facilitated by the assistants.
Figure 8. The CBPD model applied to a typical asynchronous online classroom as viewed from the instructor's perspective. In the above configuration, a classroom of 24 students has been divided into four cohort blocks facilitated by the same teacher.

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The CBPD model also may be configured to work with an extremely large online class such as what one may find at a European Open university (see Figure 10). In such a large class, the lead facilitator would primarily tend to the needs of the facilitator assistants (FAs). In turn, the FAs would each facilitate a series of cohort blocks, ensuring that facilitation is occurring within each of the cohort blocks.
Figure 9. The CBPD model applied to a very large asynchronous online classroom. In the above configuration, a classroom of 72 students has been divided into 14 cohort blocks. Each facilitator assistant (FA) is responsible for facilitating four cohort blocks, and the lead facilitator is responsible for the three FAs as well as facilitating two cohort blocks. Copyright 2012 by Bruce M. Doney.
Figure 10. The CBPD model applied to an extremely large asynchronous online classroom. In the above configuration, a classroom of 246 students has been divided into 41 cohort blocks. Each facilitator assistant (FA) is responsible for facilitating four cohort blocks, and the lead facilitator is responsible for the 10 FAs as well as facilitating one cohort block. Copyright 2012 by Bruce M. Doney.

Proposed Research Method

This section describes the proposed methods and procedures to be used in this study of the Cohort Block Pedagogical Design model as it pertains to student and
facilitator perceptions with regard to the implementation and effectiveness of the model. Included in this chapter in following order are the research problem; the research design; the research questions and null hypotheses; the setting, population, and sampling procedures; the instrumentation including the purpose of the instrument, as well as the reliability and validity of the instrument.

**Research Problem**

Larger asynchronous online class sizes have a negative relationship to student course satisfaction and learning yet are more cost-effective for postsecondary institutions to conduct than are smaller classes (Arbaugh & Duray, 2002; Meyer, 2006). Can the application of the Cohort Block Pedagogical Design (CBPD) model to large asynchronous online classes improve social presence, student cognitive presence, and teaching presence while maintaining course cost-effectiveness at postsecondary institutions?

**Research Design**

The overarching research design for this study shall be mixed-methods with the main research component being a quantitative design. A minor component of the study shall be qualitative in nature.

**Quantitative component.** In this section, the specific qualitative-based group design for the study is described. It is followed by a description of the intended pretest and posttest timeline for the study including the implementation rationale.

**The nonequivalent control group design.** The Nonequivalent Control Group Design (NEGD) described by Campbell and Stanley (1963) shall be used in this study as a framework to measure student perceptions within the constructs of social presence,
cognitive presence, and teaching presence. According to the authors, one of the most widespread designs in educational research [NEGD] involves an experimental group and a control group both given a pretest and a posttest, but in which the control group and the experimental group do not have pre-experimental sampling equivalence. (Campbell & Stanley, 1963, p. 47)

**Pretest and posttest timeline.** The intended timeline for the implementation of the pretest shall be the fourth week of the 2012 Fall semester, and the implementation of the posttest shall the eighth week of the same semester (see Figure 11).

![Weekly Timeline for 16-week Semester](image)

*Figure 11.* Weekly semester timeline for implementing study pretest and posttest.

The rationale for the pretest being administered on the fourth week of the semester is that doing so provides all student participants in the study time to acclimate to the control-group-based pedagogy and to provide credible responses to the pretest that shall be comparable to responses provided later on the posttest. According to Mohr (1995) and Campbell & Stanley (1963), it is important that the control groups and experimental groups in the NEGD be as closely matched as possible for the pretest even though all groups may not share pre-experimental sampling equivalence. Administering
the pretest at the four-week mark of the semester provides such an opportunity for a
closer match.

The intervention shall be introduced to the experimental group at the end of the
fourth week of the Fall 2012 semester, and the posttest shall be administered to control
groups and experimental group at the end of the eighth week. The rationale for
administering the posttest during the eighth week of the semester is that the final
withdrawal date for a student to not receive a letter-grade at most universities and colleges
typically falls sometime shortly after the eighth week. Consequently, student participants
who may plan to drop their respective course shall still have an opportunity to respond to
the posttest before the final day of the drop-and-add period.

**Qualitative component.** Facilitator perceptions shall be collected through semi-
structured interviews. The purpose of the qualitative component shall be to establish a
basis for developing future research questions with regard to facilitator perceptions.

**Research Questions and Associated Null Hypotheses**

The proposed study is designed to addresses the following research questions:

- Do students in CBPD courses perceive a greater sense of *social presence* than students in non-
  CBPD courses? Null Hypothesis: There is no difference in the construct of social presence
  among the two groups of student participants taking the same asynchronous course when one
  group is facilitated using the CBPD model and one is not.

- Do students in CBPD courses perceive a greater sense of *cognitive presence* than students in non-
  CBPD courses? Null Hypothesis: There is no difference in the construct of cognitive
  presence among the two groups of student participants taking the same asynchronous course
  when one group is facilitated using the CBPD model and one is not.
• Do students in CBPD courses perceive a greater sense of teaching presence than students in non-CBPD courses? Null Hypothesis: There is no difference in the construct of teaching presence among the two groups of student participants taking the same asynchronous course when one group is facilitated using the CBPD model and one is not.

• Do facilitators perceive a greater degree of social presence, cognitive presence, and teaching presence with students when applying the CBPD model? Null Hypothesis: There is no difference in facilitator perceptions regarding the constructs of social presence, cognitive presence, and teaching presence among the two groups of student participants taking the same asynchronous course when one group is facilitated using the CBPD model and one is not.

Setting, Population, and Sampling Procedures

Setting. The setting of the study is six asynchronous online classrooms at one, two, or three colleges or universities in the United States. Three online classrooms shall serve as the control or comparison group, and three online classes shall serve as the experimental group in which the CBPD model shall be introduced.

Population. The intended student population shall comprise approximately 150 college or university students enrolled in six asynchronous online courses. The student subjects shall be divided between the control groups and the experimental groups, and each major group shall be comprised of three intact virtual classrooms. Student subjects shall self-select into the population based upon their respective course-of-study requirements as well as course pre-requisites. Thus, the self-selection process shall serve to match student subjects into relatively homogeneous groups. The demographic attributes of age and sex of all participants (students and facilitator) shall be collected. Only group members 18 years of age or over shall be permitted to participate in the
study. The intended facilitator population shall consist of three facilitators who shall each teach two asynchronous online courses, one group to be a control group, and one group to be an experimental group (see Table 1).

**Sampling procedures.** Sampling for the student population shall consist of volunteer sampling, a form of purposive sampling. Student subjects shall remain anonymous throughout the study; therefore, they shall be permitted to opt out of the study without fear of retribution.

Sampling for the facilitator population shall consist of a combination of purposive sampling and snowball sampling. Facilitators who agree to participate in the study shall meet the following criteria:

- Facilitators must have at least three years experience facilitating asynchronous online courses.
- Facilitators must have a desire to engage with students in the pedagogical process.
- Facilitators must agree to allow participants to respond to a pretest and a posttest.
- The course management software (CMS) (e.g., Blackboard, Moodle) upon which the asynchronous online courses are facilitated must be flexible enough to allow implementation of the intervention with minimal disruption to the student population.
- Course timelines must support the implementation of the pretest and the posttest and must coincide within the timeline of the study.
Table 1

*Summary of Intended Student and Facilitator Population Groups*

<table>
<thead>
<tr>
<th>Facilitator Group</th>
<th>Control Group</th>
<th>Experimental Group</th>
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<tbody>
<tr>
<td>F1</td>
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<td>F3</td>
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</table>

Totals: 3 75 75

*Note.* Fx represents a facilitator within the intended facilitator population. X represents a student within the intended student population. Each facilitator shall facilitate a control group and an experimental group.
**Instrumentation**

The instrument selected for the study shall be the Community of Inquiry (CoI) survey instrument (see Appendix A) developed by Garrison, Anderson, and Archer (2000). Results through a study involving factor analysis, provide supporting evidence that social presence, cognitive presence, and teaching presence are valid constructs of the online CoI framework (Swan, Richardson, Ice, Garrison, Cleveland-Innes, & Arbaugh, 2008).

Data collection shall involve an online administered pre-test of the CoI instrument to both the intervention group and the control group during the second week of the beginning of the semester. The posttest shall be administered online to both groups during the eighth week of the semester. Participation is voluntary and shall meet the approval of the IRBs of all institutions prior to beginning the study. All data shall remain confidential. Qualitative data collection shall be done by telephone interview of the teacher participants. The semi-structured interview process shall be based upon the CoI instrument. Analysis of the quantitative data shall utilize ANCOVA and shall focus on the three constructs: social presence, cognitive presence, and teaching presence.
References


Appendix A

Community of Inquiry Survey Instrument

Please rate the following:

SA= Strongly Agree   A= Agree   N=Neutral   D=Disagree   SD =Strongly Disagree

<table>
<thead>
<tr>
<th>Teaching Presence</th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
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</thead>
<tbody>
<tr>
<td>1. The instructor clearly communicated important course topics.</td>
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<td>2. The instructor clearly communicated important course goals.</td>
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<tr>
<td>3. The instructor clearly communicated important course topics.</td>
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<tr>
<td>4. The instructor clearly communicated important due dates/time frames for learning activities.</td>
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<td>5. The instructor was helpful in identifying areas of agreement and disagreement on course topics that helped me to learn.</td>
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<td>6. The instructor was helpful in guiding the class towards understanding course topics in a way that helped me clarify my thinking.</td>
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<td>7. The instructor helped to keep course participants engaged and participating in productive dialogue.</td>
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</table>
8. The instructor helped keep the course participants on task in a way that helped me to learn.

9. The instructor encouraged course participants to explore new concepts in this course.

10. Instructor actions reinforced the development of a sense of community among course participants.

11. The instructor helped to focus discussion on relevant issues in a way that helped me to learn.

12. The instructor provided feedback that helped me understand my strengths and weaknesses.

13. The instructor provided feedback in a timely fashion.

<table>
<thead>
<tr>
<th>Social Presence</th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
</table>

14. Getting to know other course participants gave me a sense of belonging in the course.

15. I was able to form distinct impressions of some course participants.

16. Online or web-based communication is an excellent medium for social interaction.

17. I felt comfortable conversing through the online medium.

18. I felt comfortable participating in the course discussions.

19. I felt comfortable interacting with other course participants.
20. I felt comfortable disagreeing with other course participants while still maintaining a sense of trust.

21. I felt that my point of view was acknowledged by other course participants.

22. Online discussions help me to develop a sense of collaboration.

Cognitive Presence

<table>
<thead>
<tr>
<th>23. Problems posed increased my interest in course issues.</th>
</tr>
</thead>
<tbody>
<tr>
<td>24. Course activities piqued my curiosity.</td>
</tr>
<tr>
<td>25. I felt motivated to explore content related questions.</td>
</tr>
<tr>
<td>26. I utilized a variety of information sources to explore problems posed in this course.</td>
</tr>
<tr>
<td>27. Brainstorming and finding relevant information helped me resolve content related questions.</td>
</tr>
<tr>
<td>28. Online discussions were valuable in helping me appreciate different perspectives.</td>
</tr>
<tr>
<td>29. Combining new information helped me answer questions raised in course activities.</td>
</tr>
<tr>
<td>30. Learning activities helped me construct explanations/solutions.</td>
</tr>
<tr>
<td>31. Reflection on course content and discussions helped me understand fundamental concepts in this class.</td>
</tr>
</tbody>
</table>
32. I can describe ways to test and apply the knowledge created in this course.

33. I have developed solutions to course problems that can be applied in practice.

34. I can apply the knowledge created in this course to my work or other non-class related activities.

<table>
<thead>
<tr>
<th>Satisfaction</th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall, I was satisfied with this course.</td>
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</table>

<table>
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<tr>
<th>Learning</th>
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</thead>
<tbody>
<tr>
<td>I learned much in this course.</td>
</tr>
</tbody>
</table>

* Used by permission from Dr. D. Randy Garrison, University of Calgary
Appendix B

Bibliography


Gahungu, A., Dereshiwsky, M., & Moan, E. (2006). Finally I can be with my students 24/7, individually and in a group: A survey of faculty teaching online. *Journal of Interactive Online Learning, 5*(2), 118-142.


