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Research article

The Ideal Class Size and Assessment Methods in Distance Learning Environment

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Abstract

This article is an excerpt from a previous research. The study was a qualitative case study and the purpose was to explore the need for program development in a distance learning environment in the United States as a whole and to identify strategies for using best practices established in U.S.-based distance education programs as a basis for developing a model for other systems.

To preserve anonymity of the cases and participants involved in the study, all names were changed to pseudonyms. The schools are identified as follows: Private School A (PSA), Private School B (PSB) and Online Public School (OPS). Private School A participants are designated with the names John, Janet, Teresa, Jerry, Elizabeth, Mathew, Cynthia, Ben and Stacy. Private School B participants are designated as Boris and Jonathan, and the OPS participants are named Andrew and Samantha. The study findings can inform institutions where quality education is needed to better prepare under-served school populations for higher education and for further contribution to the development and prosperity of that nation.

Keywords: Class size, Assessment

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Introduction

The impact of technology in the educational world cannot be underestimated (Monolescu, Schifter & Greenwood, 2004, Nsiah, 2011). It has been credited with reducing the educational gap between developed and developing nations through distance education (Breen, 2006). Learners around the world are demanding anytime and anywhere forms of education, and learning institutions are responding to that demand by implementing various forms of digitally-based education (Schrum & Hong, 2002).

Distance education is not a new concept, but in recent years, it has assumed markedly new forms and greater prominence. Now, it is one of the fastest growing forms of education and is becoming more a part of mainstream education through courses taught by Internet or videoconferencing (Ashby, 2002). In a very short period of time, academic institutions have been provided vastly expanded opportunities to provide a flexible and more open learning environment for students, and this trend continues as the technology continually improves (McIsaac & Gunawardena, 1996). In view of this, the need to explore the ideal class size and assessment methods in distance learning environment is expedient. The following interview questions provided the basis for data collection for this research:

- IQ 1: What is the ideal class size for your program?
- IQ 2: What methods are used to assess students' performance in your program?
- IQ 3: How do you control plagiarism and/or cheating?

In line with the above questions, categories related to class size and students assessment were identified and are discussed in the following sections. These categories emerged from the interview questions and are the result of building a logical chain of evidence through pattern-of-commonality identification in line with the research questions (Creswell, 2007; Davies, 2007, Nsiah, 2011).

Class Size

Class size is a matter of considerable importance in distance education—in either synchronous or asynchronous programs—as determined by the participants of this study. Interviewees admitted that teaching online is different from teaching in a traditional classroom. With distance learning, there is a great deal of after-classroom work. Teachers respond to students' emails to answer questions or clarify understanding on issues, and students have more access to instructors via this medium. In view of this, the amount of time necessary to address the needs of each student rises in significance, and with this, class size also becomes a matter of significance.

When asked about ideal class size for a distance program, PSA administrator/instructor Teresa said, ―*It depends partially on the topic and how the teacher is teaching the course*. She remarked, ―*But I'm comfortable teaching more over 30 students*. However, she suggested a class size between 15 to 30 students is more desirable for their program. Ben, the program

director for PSA, suggested a class size of 18 to 24, remarking, ―*Synchronous distance education class size should not be as many as a traditional classroom*. He continued, ―*Students do have contacts with teachers on camera but most of the communication is on one-on-one. After class sessions, students are either texting, emailing, telephoning or instant messaging, and that's time consuming for the teachers.*

Jonathan, the participant from PSB who had experience with videoconferencing as part of the programming, also suggested a maximum class size of between 26 and 30 for an experienced distance education teacher. He cited his experience of teaching a class size of 45 students, which he said was too challenging:

> *When I taught junior Bible with 45 juniors a couple of years ago, I spent an hour and a half grading one assignment for all 45 of those kids. So, if I gave out lots of assignments, then I could spend a lot of time grading, and that's challenging. But a good size class would be like 26 to 30 students.*

While there was strong agreement on small class sizes between PSA and PSB, Samantha, e-solution manager at OPS, suggested a class size of 125-150 per teacher in their online program. According to her, some teachers can even go beyond that depending on the nature of the course:

> *You can go more, but what happens is if you get too high, teachers cannot serve the students effectively. We're doing a lot of research now to try and figure out where that balance is. Too many students creates a situation where the teacher can't spend enough time with individual students, and they [teachers] stop being creative. They stop developing those things that I was talking about like podcasts and little videos because all they're doing is reacting instead of being proactive. So we're doing research to try and figure out where that middle ground is—the place where students are the most successful and move the most efficiently through the course and the place where teachers can do the best for their students. Because even though you might have a smaller class load, if the kids are moving quicker through the course because they're having more support, really more kids are going to go through the course. So we're doing some experimentation, but probably 125, 145, 150 would be best. Different teachers probably can handle more. Also it probably depends on the course. We have found that AP (Advanced Placement) level [courses] have fewer students than do basic level. It just depends.*

The question as to what constitutes an ideal class size brought forward various answers across the three cases, though there was general agreement between PSA and PSB. PSA suggested an optimal class size of 15-30, and PSB suggested a class size of 18-30, while OPS suggested a class size between 125-150.

Assessment of Student Learning

Assessment is the means by which educators determine how much students have really learned in a course. It is a measure of the progress of students (Weller, 2003). According to Boud (1995) assessment methods and requirements probably have a greater influence on how and what students learn than any other individual factor.

Quality of learning, Mateo and Sangra (2007) contended, must measure more than student learning achievement or success; it should be related to the effectiveness of the instruction that takes place in the classroom. According to Comeaux (2005-2006) instructors with a belief in and appreciation for constructivist learning acknowledge the importance of using authentic tasks for evaluating students' performance in online courses.

Methods Used

The three cases involved in this study made assessment a vital part of their programs. A variety of assessment methods were used at the various sites in this study, but the most common means, as confirmed by this research, were through portfolios, projects, tests and quizzes. Within this major theme, measures taken by the studied cases to control plagiarism and cheating in their program is also discussed.

Elizabeth, a pioneer of the program at PSA, described the most common method of assessement during her time at PSA:

> *The main form of assessment was projects—the portfolios. We didn't really have a lot of tests. We actually did implement a few in the language area due primarily to parent resistance and the resistance from our institution organization, because they couldn't believe that the students were actually being taught, like the grammatical stuff, especially in English. So we did put in place a weekly little quiz. But assessment was primarily portfolio-based, project-based, with rubrics and so on.*

Theresa, a current administrator/teacher at PSA, confirmed that portfolios for assessment continued to be used at this site. She explained the format used to submit portfolio assignments and to assess students:

> *The portfolio was an excellent way. They could submit the portfolio with the papers, but we encouraged them to submit the portfolio on CD or DVD, no paper. The teacher could open that up and could assess it, close it, send it back to them, and no paper involved. It shows their progression in each subject area, and you can see how much they had changed and grown. And then you have other way points that you can take a look at.*

Teresa explained other ways they had been assessing students at PSA:

> *We have regular testing. We have the more normal assessments that would take place in a classroom that a teacher is doing. We also have a curriculum specialist who kind of oversees all of the curriculum, and she does spot checking and checks and sees how it's going and does a quick perusal of student work and how they're responding to assignments, that kind of thing.*

Samantha, e-solution manager at OPS, explained their modes of assessment, which are designed around Bloom's Taxonomy:

> *We try to have at least 60% of our assessments be at higher level Bloom's Taxonomy. We use true/false, multiple-choice, etc., as well as essays, papers, and projects. But just because you do those kinds of short answer kinds of questions, that doesn't mean they can't be higher order questions. We also do a lot of projects. Some of the projects are out-of-your-seat-and-away-from-the-computer kinds of thing, in which students might interview people or go out into the community and do something, create something. And we also try to include choice for students whenever possible. Not every assignment is going to have a choice, but more and more we try to allow kids to pick a little bit more because having that control really makes a difference for them, even in the stories they choose to read.*

Assessment of student learning is a universal theme. All three sites utilized regular testing methods for assessment such as, portfolios, true or false questions, multiple choice tests, and projects. An accompanying issue within this heading is the issue of plagiarism and cheating. Study participants acknowledged the challenge, and each school was working to address the issue both proactively and through reactive measures when necessary.

Plagiarism and Cheating

Plagiarism and cheating are of concern in both traditional and distance education classrooms (Rowe, 2004), and, according to Rowe (2004), its prevention has been given much attention. Plagiarism and cheating prominently emerged as a theme from the data analysis. During this research, participants discussed the issues and talked about the efforts being made to control this problem.

Administrator/instructor Teresa at PSA explained how plagiarism and cheating could be detected, noting ―*When you open an assignment submitted by the entire* [group of] *students, it's very easy to see if they've been copying because the font format just showed up*. John, also a PSA teacher, discussed a way of apprehending students for plagiarism and cheating, commenting,

> *If you are suspicious that a work doesn't sound like a student's usual writing, you have to check that by using some of the sites that are available on the Internet. You can actually take some words and phrases and put them into a site like Turn-it-in-dot-com and it will tell you whether it's found anything on the Internet.*
>
> *The kids will try, but once they get caught, they usually don't try anymore because they know the teacher is on top of it. But they'll try to do it; they'll try to slip some things by. But if you know students well, and you know that this is what they do when theyre writing something that doesn't require them to do research, and suddenly you get this one that's perfect in every way, you say, ―I have a question on that.*

According to Elizabeth from PSA, plagiarism and cheating are an issue because of the way students are assessed. She suggested, ―*If students will be assessed through project-based and cooperative work and not testing,*

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there won't be a lot of plagiarism. Elizabeth believed that project-based forms of assessment can ―*tap the creativity of the student*.‖ She stated further, ―*Students figure out how to create their own work rather than copying what someone had already produced*. Mathew, PSA technical director, also talked about how to deal with plagiarism and cheating. He explained, *every document has metadata. Metadata is who wrote it, what time did they write it?*

> *What was the last change that happened to it? And when you know at what times was it edited, that's metadata. And alternatively there are web sites that are available to check the content of what has been produced. If a student writes a paper, there are services available on the Internet for the teachers to subscribe to that allowing them to submit a student's paper to a web site. Within a few seconds, the paper comes back and says how much, percentage-wise, of this paper can be found word-for-word on the Internet. So if a student goes out onto the Internet and does a ―cut and paste into a document and then submits the document for an assignment, the teacher can submit that document to this website. The website checks the veracity of the authorship and then returns to the teacher what the percentage of veracity is. And so if it's over a certain percent, the teacher says, ―You cheated. So it's probably easier to check than you might think.*

From the PSB perspective, Boris, the initiator/director, explained how they used agreement forms signed by the adult supervisor and other means to control plagiarism and cheating in their program. He explained,

> *During test periods, we get signatures from the adult supervisor. They sign a form saying that this test had been done without using other materials. Most often, we would do a lot of open-book testing and just move away from facts, move to a lot of synthesis questions and things that help avoid cheating. And we found that it was more effective.*

Jonathan, PSB participant, advised,

> *As far as controlling cheating, basically, the number one thing to do is really really stress at the beginning of the school year. At the beginning of the school year, go over what is plagiarizing, what is cheating. Go over that very carefully with your students and help them to understand how serious it is, and actually give them different examples of what's cheating. If they copy stuff from the Internet and pasted it and turned that work in as their own, come up with some discipline action.*

Jonathan believed that with experienced teachers can detect if a student plagiarized or cheated. He explained,

> *One thing about teachers who are in this field is that if they do it long enough, it's very easy to see that a student has cheated. Other things that I've done that I don't let my students know that I do is that if my student is writing at a level that's above and beyond what they've ever written before, that kind of gives you a hint. I'll take a sentence of*

theirs and paste it on Google, and I'll put quotes in front and at the end, and I'll do a search on it. And if that sentence pops up with exact quote, then I can see, I can look at that page, and look at what they turned in, and that shows me that they cheated on that. That's one thing that I do to help monitor and control plagiarism. I try to be preventive and teach them how that's wrong, and teach them not to do it but then also act on it when I see it happening in my class.

Andrews, vice president for OPS, also identified the mechanism they use in dealing with plagiarism and cheating in their program:

We have an entire instructional integrity organization to make sure that we do have the child on there and not someone else. We put all students through a plagiarism system to see if we have any plagiarism going on. And that's not only from things that are out there but also other students work we might have received. So we have actually a whole system that goes through that.

We have an integrity department that makes sure students are doing what they're supposed to. Students must sign agreements in the front end of the courses that they agree that this is going to be their work. But teachers are also taught a series of techniques to determine whether it's someone else or the student on there. There's a whole bunch of creative ways you can use. As they get to know students, they get to know things about those students. For instance in the middle of an assessment, a teacher might asked, —Hey, how's your dad doing on such and such? If they don't know the answer to it, then they know they don't have the kid.

Samantha, an e-solution manager at OPS, admitted that plagiarism and cheating are an issue in distance education just as they are in traditional classrooms. She gave a similar view as some of the participants and even provided a more in-depth explanation than Andrews at OPS gave as to how plagiarism and cheating is controlled in their program. She posited,

Plagiarism is an issue in any educational institution. Sometimes people talk about how there is more cheating in the online setting, but this just makes me laugh because when I taught in a brick-and-mortar school, I saw a lot of cheating going on. We deal with cheating at OPS just like they do anywhere. You have to know your students. If you have a good relationship with your students and their parents, and you know what their work looks like and sounds like, then when it doesn't look like them, you know it. It is a teacher's intuition. But also we have other things in place. We use turn-it-in-dotcom. We have it integrated into our learning management system, so the assignments which are turned in by students are automatically taken into the system, and then teachers are able to get reports on each student's work. If it has been copied, the report tells what

percentage and where it came from. It creates a database for us.

In addition, we have an academic integrity team. They also work on looking at things like Yahoo answers and help teachers handle situations in which they suspect plagiarism might be occurring. Just like anything, we just keep going after it, but the biggest thing we can do is to stay in contact with our students and really have that relationship. Some of the other interesting things we do though . . . we have test banks for our assessments. So, for instance, if a student needs a test reset, they're not going to get the same questions. Or, if two kids are in a lab taking the same test, the questions are not going to be necessarily the same. The computer automatically pulls from the question bank. There will be a particular number of questions for each standard, and those questions are shuffled so the standards are always being assessed but not with the same questions each time. Another way we utilize test bank is to give kids another chance if they don't master the material. If they don't pass the test, they obviously didn't have the skills, and they need to do it again. But we don't want to give students the same questions because they may remember the answers. We do our best to give them new questions so they get another shot but with new material. We are really cognizant about creating good-sized test banks.

We also make use of discussion-based assessments as an academic integrity measure. We do those at least once within a module where we just get on the phone with a student and talk to them about the work. And it's a discussion. It's not a quiz. With one of my students in English I might say, —I see you just got done reading . . . Fahrenheit 451. What was your favorite part? Well, if they just finished a paper and got a 100% and can't tell me their favorite part, then I know right away that it is not their work! Discussion based assessment also gives teachers a feel for what students have grasped and what they haven't within the course. . . . If I say —I noticed you didn't do so well on this part of the test, let's talk about it, or —you did really great over here; what made that so easy and interesting for you? it's a discussion. It allows instructors to know what a student knows, and it also allows instructors to know if students are doing their own work and make sure it's not somebody else doing it for them.

All three institutions acknowledged plagiarism and cheating as issues of concern. As a result, they had measures in place to detect and discourage the practice. Methods such as knowing students writing ability and standards, doing project-based assessments, using electronic means by doing word searches or using Turnitin.com are in place to check the originality of student work. Other methods such as doing metadata checks, stressing the issues at stake at the beginning of the school year, imposing an academic honesty contract between the student and the school, using test banks, and giving discussion based assessments are all means of checking the issues, and all of

these were noted in the interviews as effective strategies. Just as the practice of cheating and plagiarizing are not unique to the online environment, neither are the strategy used and identified by the participants unique to distance education.

Summary and Conclusion

The question as to what constitutes an ideal class size brought general agreement between Private School A (PSA) and Private School B (PSB) while Online Public School (OPS) suggested that ideal class size can exceed 125 in their model of distance education. These very different answers indicated that in the distance learning environment, one size does not fit all. Class size depends on the nature of the class and program.

All cases used different technology and ran synchronous and/or asynchronous programs with differing numbers in class size. With these varying numbers in class size, assessment of students' learning in these different environments was of great interest, and assessment of student learning emerged as a category.

All three sites utilized regular testing methods for assessment such as portfolios, true or false questions, multiple choice quizzes, and projects. All three sites also acknowledged plagiarism and cheating as issues. For combating plagiarism and cheating, the three sites highlighted the need for teacher to know each student‘s level of writing and reported using electronic means like Turnitin.com as way of handling the practice. Additional strategies to prevent and address academic dishonesty also emerged from the interviews, and given the substantial effort schools put into dealing with issues of academic dishonesty, it is evident that including this consideration in the plan for the Ghana model of distance education will be critical.

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