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Are the concepts "onsite study" and "distance study" outdated?

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Abstract

Today's students demand another approach to learning than the approach taken for students entering the school system 20 to 30 years ago. Modern students' expectations and demands with regard to how and when they want to study are not the same as they used to be. Students now want more independence in how they plan their study, including having the ability to take distance courses, receive material and information posted online and take advantage of the potential of today's technology. A growing interest in distance learning is one part of this development. Concepts like "onsite" and "distance" study and students have been used, but with a large – and growing – part of the course material being available online for both onsite and distance students, the barriers between these two groups have been minimized. The question is: are these concepts outdated, and is it necessary to make a distinction between onsite and distance study and students? Research was done within the course *Spoken and written language* at the University of Iceland in the year 2012 to discover whether it is possible to combine onsite and distance courses into one, throw away the old concepts and use only "study" and "students".

Keywords: Onsite and distance learning, onsite and distance education, changes in teaching.

Introduction

Considerable changes occurred in education in recent years. These changes are largely a result of ever-evolving technological advances entering the classroom, introducing opportunities to completely rethink how education is delivered. Distance education has grown into a mainstream method of conducting teaching, and on the back of that change and in some respects, has resulted in the decline of traditional, in-classroom education.

Teaching within the traditional classroom, which has roots that date back to the 18th century, seems to be retreating while students' requirements as to how their study is planned and what study is available have changed significantly. Today's students demand another approach to learning than that demanded by those who entered the school system 20 to 30 years ago. Today's students prefer more active learning, and their tolerance and needs have changed (Roehl, Reddy & Shannon, 2013).

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Students now want to receive teaching materials and information posted online and many teachers have worked to meet these requirements. But some teachers have taken advantage of technology in teaching and started putting all teaching material and various data online, where the students have full access to them. The great popularity of the flipped learning approach is a good example of this movement (Bergman & Sams, 2012). In this framework, students are able to take advantage of the potential of today's technology and be more independent in how they plan their study. This approach also fosters personal responsibility with regard to the own learning. Educators have had to evolve their teaching methods accordingly to cater to today's students and how technology has influenced today's students' expectations. A part of this change is number of options for distance study, which have been increasing over the last two decades. Instead of coming to class to watch the teacher lecture, the students want to have control over their study and be able to choose how, when and where to study.

This has made the separation between onsite and distance study vague and has to some extent eradicated the difference. However, the distinction between onsite and distance study is very clear in curricula. Courses are offered either as onsite or as distance study courses. Heading into the 21st century, it seems as though education and technology have evolved to merge into each other, effectively wiping out any meaningful distinction between onsite and distance student or study. But the organization and nomenclature behind the concepts of onsite and distance student and study have not changed as rapidly. It is time to take this final step, abandoning the qualifiers and referring to the concepts only as "*student*" and "*study*". When both groups – onsite and distance students – have their teaching material online, this distinction is unjustified and can to some extent be a hindrance for the development of the teaching theories.

In the autumn semester of 2011 the supervisor of the course *Spoken and written language* at the University of Iceland took this next step in practice and experimented with eliminating the barriers between onsite and distance study. The concepts of onsite study, onsite student and distance study, distance student were made redundant and were never used in writing or speech; in the course the terms *study* and *students* were the only terms used when the course was planned. The entire organization was integrated; everything was the same for all students and no distinction was made between students based on how they had enrolled for the course as onsite or distance students.

A survey was done in order to confirm the belief that it is possible to change the use of the terminology, and get an answer to the question: How realistic is it to stop using the distinction onsite study, onsite student versus distance study, distance student for the course *Spoken and written language*? And how effective is it to only use the terms "*study*" and "*student*"? It examined whether students experienced any differences in the course's structure and services for the two groups of students.

This text outlines the reasons for discontinuing the use of the terms onsite study, distance study, onsite student and distance student, the various teaching models are presented, a report is discussed regarding the joint teaching of onsite and distance courses at the University of Iceland's School of Education, an experiment conducted at the University of Akureyri is presented, and, finally, the expected developments in teaching methodologies in the future are discussed. Then the structure of the course *Spoken and written language* will be outlined where the concepts of onsite study, distance study, onsite student and distance student, were rejected.

The hypothesis is that it is possible to "throw away" the concepts of onsite and distance study and onsite and distance student and just talk about "*study*" and "*student*". With

these barriers fading and students choosing either to take courses online or face-to-face, even during the same term, the question arises as to whether the concepts of onsite study, onsite student and distance study, distance student, are outdated. The theory here is that by using these terms, students make different demands of the courses in terms of what they "think" a distance or onsite course represents or stands for and therefore the distinction might be an obstruction.

Distance education

University of Iceland's School of Education can be considered the cradle of distance education in Iceland. With the development of distance education, its structure has mostly remained similar to what was started two decades ago, i.e. distance education, either with or without onsite learning sessions, but most often with organized onsite learning sessions, often one or two per semester, with attendance generally being compulsory (University of Iceland, 2014). Additionally, now the teachers provide recordings of lectures that are uploaded to the course web page that is accessible by all students regardless of their location. Development has been similar overseas and the most prestigious universities in the world now offer distance teaching together with onsite teaching in a similar manner as the Icelandic university does. These include Harvard University (Harvard Extension School, 2014-2015), Stanford University (e.d.), University of Florida (2014), among other universities.

In the United States, enrolment in distance education has increased rapidly. Distance learning will become more popular in the coming years. Nowadays out of nearly 20 million enrolled students at the university level in 2010, over 6.1 million, or 31 percent, of all students in higher education were enrolled in at least one distance course in the autumn semester of 2010, an increase of 560,000 from the previous year. The corresponding number was almost ten percent in 2002 (Allen & Seaman, 2011). It is estimated that the number of American students who enrol in traditional education would fall by about 71 percent during the period 2010 to 2015 - from 14.1 million to 4.1 million (Moskal, Dziuban & Hartman, 2013). As the growth trend continues, more types of students are included in online distance education courses, and they will become more inclusive (Corry & Stella, 2012).

Changes

Today distance students do not necessarily live in the countryside, as was the case in the early days of distance education; in fact a distance student can just as well be living next door to the school and possibly also be enrolled in some onsite classes during the same term. Neither does the term onsite study mean the same thing nowadays as it did years ago, when the majority of the course material was included in textbooks.

The concept of onsite and distance students has therefore changed within the last decade, and the students are also different. Now the worlds of onsite and distance students have met because teaching takes place largely online, and it is the same for onsite and distance courses. Often, a large part of the course material is located online. Communication between students and teachers mostly takes place online, both for onsite and distance students, and written assignments are more often than not submitted electronically. The differences between onsite and distance students have thus been reduced, since technology has advanced considerably and education is now quite different from what it used to be. Thus, the hypothesis is proposed that the meaning of the concepts onsite study, distance

study, onsite student and distance student has been exhausted and weakened with regard to the process of coursework planning.

Specialists are continually searching for the best teaching model for distance and onsite teaching. As it was stated above, at the dawn of distance education, the teaching methods that distance teaching and onsite teaching employed were usually quite separate and the only thing that they had in common was similar course descriptions and common final examinations. Over the years, teaching methods have evolved and changed with advances in technology, widespread computer ownership and students' access to the internet.

The possibility for students to choose between onsite and distance study increases the need for teachers to look for new ways and adapt to new thinking. Teachers who have experience with onsite teaching encounter big challenges when it comes to teaching in the distance-learning format. Besides the efforts to maintain the foundation that they have created in onsite teaching, they need to find a way to change the functionality and structure of onsite teaching to suit distance teaching – how to convert a well-structured learning and teaching programme for an onsite course and at the same time make full use of the electronic media available (Sugar, Martindale & Crawley, 2007).

This struggle has produced a number of positive changes in teaching methodology, which has to some extent become more diverse, for example because of the efforts to maximize efficiency and bring teaching closer to modern practices. One result of this has been the so-called *blended learning* method, which is now widely used where onsite and distance study is mixed (Moskal, Dziuban & Hartman, 2013). The benefits of the blended learning method have in reality produced a new twist to teaching. Instead of teaching onsite and distance courses in two separate programmes, these two programmes are now being combined.

Table 1

Teaching methods

Proportion of Content Delivered Online	Type of Course	Typical Description
0%	Traditional (A)	Course where no online technology used; content is delivered in writing or orally.
1 to 29%	Web Facilitated (B)	Course that uses web-based technology to facilitate what is essentially a face-to-face course. May use a course management system (CMS) or web pages to post the syllabus and assignments.
30 to 79%	Blended/Hybrid (C)	Course that blends online and face-to-face delivery. Substantial proportion of the content is delivered online, typically uses online discussions, and typically has a reduced number of face-to-face meetings.
80% +	Online (D)	A course where most or all of the content is delivered online. Typically have no face-to-face meetings.

Before proceeding, however, one needs to define the terms onsite study, distance study and "blended learning method", as they are used here. Allen and Seaman (2011) have proposed a definition of how to view different types of study programmes with regard to onsite study and distance study. They prepared the following table (Table 1) in order to facilitate the analysis; it is shown here in columns 1-3. Despite the considerable diversity with regard to course structure and the methods used by teachers, this table demonstrates to some extent a typical classification.

This chart provides a definition of the various teaching methods. Teaching methods (A) and (C) are probably the ones that have been used the most at the University of Iceland's School of Education, on the one hand (A) pure onsite courses, where onsite students receive typical teaching, lectures, and exercise classes, and, on the other hand, (B) courses where most of the course material is on the internet but the students attend onsite study cycles. Distance students get access to lectures that have been recorded in a lecture hall with onsite students attending, or lectures that have been specially recorded for distance students. Often discussion threads are created on the internet for distance students to use as a partial substitute to exercise classes. The courses take place simultaneously. The course material is the same, and examinations and homework are the same. This would be classified as the traditional form of these two teaching methods. Method (D) has in some cases been used, but primarily because of the teacher's decision to "drop" onsite study cycles. It is the teachers, not the students, who decide what teaching method is chosen, and by choosing method (C), the teachers (perhaps unconsciously) have created conditions for the concepts "distance teaching" and "onsite teaching" to become redundant.

Neither learning nor teaching is today confined solely to the classroom. Course web pages, which offer many benefits with regard to course material distribution in different forms, are becoming more and more efficient. Both onsite and distance students now want course material to be distributed online. They want to have access to all course material online: lectures, if they are to be shared, slides, supplementary reading material, URLs and any other materials, as well as online communication with teachers. Students want to have access to the course material at any given time that suits them: to be able to listen to recordings, view slides, work on projects submitted to the web, read materials that have been made available online, and more[1]. All this helps students in the learning process and makes learning more diverse and suitable for more people. The future is in this type of education.

Following the development of teaching online, so-called flipped learning has gained a foothold around the world and in all likelihood this method will develop rapidly over the next few years. In this teaching approach, the traditional teaching method is turned upside down (Bergmann and Sams, 2012). The actual learning in front of the computer, iPad, iPod or iPhone, through recordings, which have been made available online. Each student can watch or listen to the recording as often as necessary. During onsite sessions the knowledge is processed (Alvarez, 2011, Davies, Dean & Ball, 2013). The most prestigious universities in the world now offer flipped classroom teaching, such as Harvard University, Massachusetts Institute of Technology (MIT), University of California at Berkeley and other respected

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[1] These statements are based on surveys conducted annually since 2007 for the course *Spoken and written language*.

schools (Hardesty, 2013). Furthermore, Sal Khan at the Khan Academy (2013) has earned a good reputation for his short instructions on the web, with short, targeted recordings on certain specialized subjects. This is a prime example of content that is openly available online that students can use as additional material, both onsite and distance.

Blended learning and personal choice

The decision to change teaching methods must be taken in agreement with the community that is to work with these changes. For example, if two-thirds of academic managers believe that distance education is "equally good" or better than onsite education, as a survey quoted by Allen and Seaman (2011) suggests, this means that one-third of all academic managers continue to believe that distance study is less effective than other methods of instruction. Such attitudes are very serious and do not facilitate progress in teaching methodologies. This should give us the strength to stop using these terms and "dare" to make the final step.

Garrison and Kanuka (2004) ask the question: What are the risks associated with the transfer of university education from a 19th century level to the 21st century, when more and more people believe that sitting in a large lecture hall several times a week is not intellectually stimulating or worth making a trip to the location? One should seek out new ways. It is important to keep in mind that blended learning is not a technological trend; it is a procedure and a method that is possible to build in a progressive, systematic and deliberate way. Blended learning makes it possible to create the necessary conditions in the classroom to mix these features with onsite education and the use of electronic materials.

One thing is certain: blended learning does not promote "being in a rut," said Garrison and Kanuka (2004). It does not mean finding the right "blend" of technology or increased access to learning materials, but instead it means restructuring the relationship between teaching and learning. Blended learning has taken on a new form with the development of technologies that are used, such as video recordings, interactive communication with video conferencing and discussions, flipped teaching and more. It involves rethinking the approach, redesigning the teaching and learning environments. This work can be carried out together with either onsite or distance students, and as a result it becomes easier for the teachers to make the concepts onsite student and distance student redundant.

Blended learning constitutes the choice and work of teachers who strive to take advantage of all the technology that can be utilized to make teaching more effective with a wider range of methods and easier access to the course material for all students.

It is not just teachers who consciously or unconsciously have weakened the difference between onsite teaching and distance teaching. Students have also played a role in the process of making the concepts redundant. As stated above, the School of Education's students need to choose every time they register for a course whether they intend to take the course as onsite or as distance students. It has emerged that students increasingly choose to put together their own programme of study, including both classroom learning and distance study. That is, the same student chooses to be an onsite student for one course but a distance student for another. Those students who choose to do so most likely do not see themselves as either/or, that is, as onsite students or distance students. It raises the question as to whether the difference between onsite and distance study has any importance for students any more. This question has not yet been answered, but it can be assumed that students select courses mostly according to the nature of the courses and based on whether they find the courses more suitable as onsite or distance courses.

This has been called "self-blend" (Staker, 2011), but here will be called "personal choice". It involves students organizing their studies independently and by doing so they have, to some extent, chosen to stop using the concepts onsite student, distance student, onsite study and distance study. Those students who make a personal choice to mix onsite and distance courses hardly considered themselves either as onsite students or distance students, but simply as students. Staker (2011) states that in the United States the number of students who choose a blended programme of study is rising sharply, especially in primary and secondary schools. The same trend has been observed in Iceland but mostly at the university level.

Onsite and distance courses under the same course code

A study of the attitudes of teachers and students from the School of Education to the joint teaching method, conducted by Jóhannsdóttir and Jakobsdóttir (2012) in collaboration with the Centre for ICT and Media, the teaching board and the management of the School of Education at the University of Iceland, showed that students preferred to be able to enrol in courses either as onsite or distance students, and that they welcomed flexibility with regard to teaching methods. It is not known why. In an interview with Hanna Þóra Hauksdóttir (17 April 2013), project manager at the teaching office of the School of Education, she stated, based on data that she provided herself, that many of the students at the School of Education preferred to take advantage of the right to be able to choose to enrol in a course either as onsite students or distance students[2].

The aforementioned study by Jóhannsdóttir and Jakobsdóttir (2012) showed that after the first year of joint teaching onsite and distance courses under the same course code, participants' experience was that the new course structure was worse than before. An evaluation survey regarding the advantages and disadvantages of the joint teaching method among students and teachers indicated that the new arrangement experienced some growing pains and both teachers and students thought it had more disadvantages than advantages, compared to teaching in separate groups for onsite and distance study (Jóhannsdóttir and Jakobsdóttir, 2012).

The results of the survey are interesting but one might ask whether the results would have been different if, during the planning of the courses, the terms onsite study, distance study, onsite student and distance student had not been used. In this respect, reference is made to the author's experience that the expectations and beliefs of each one of the groups vary depending on the teaching method they choose – onsite study or distance study. As soon as the student chooses one of the methods, he or she creates certain expectations regarding services from the teacher. Those who are registered as distance students expect all course material to be found on the course web page and communication with the teacher to be by email with prompt responses! Those enrolled as onsite students like to "get to attend" classes and lectures and like to and expect to be able to knock on the teacher's door. These results further support the idea that the meaning of the concepts onsite study, distance study, onsite student and distance student has been weakened when it comes to the planning and teaching of courses.

During the spring semester of 2011, Björnsdóttir did an experiment by teaching three courses with the greatest possible flexibility at the University of Akureyri. It was proposed

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[2] No numbers are available.

that no distinction would be made between onsite and distance study. Subsequently, a study was conducted regarding the students' attitudes towards internet-based teaching instead of attending traditional classes at the university or at a distance-learning centre at a fixed time (Björnsdóttir, 2012). Emphasis was placed on minimizing the differences between onsite study and distance study as much as possible and giving all students the opportunity to pursue their studies regardless of time and place (Björnsdóttir, 2012).

The results from Björnsdóttir's study (2012) showed that the connections between onsite students and distance students were not big and they did not regard themselves as belonging to the same group of students even though they attended the same course. Besides, certain scepticism was observed among members of both groups regarding cooperation across groups; this scepticism being considerably higher among onsite students. Björnsdóttir (2012) concluded that the goal of making the students view themselves as belonging to the same group had not been achieved completely. According to Björnsdóttir, the explanation may lie in the fact that the students had already defined themselves as belonging to separate study groups before they started the course. It is also possible that onsite students had not managed to get to know the environment as well as is necessary for working online.

The results from Björnsdóttir (2012) are perfectly in line with the results of Jóhannsdóttir and Jakobsdóttir (2012) as well as the results of the surveys that were conducted in the course *Spoken and written language*. Both groups, onsite and distance students, believed that they did not receive the services they needed. The expectations were dictated to some extent by the teaching method they chose rather than by the structure of the course. Onsite students believed that distance students received more material posted on the web, even though this was not the case, and distance students complained of the lack of communication and thought that onsite students received better services in the classroom.

Spoken and written language

The results of Björnsdóttir's (2012) and Jóhannsdóttir and Jakobsdóttir's (2012) research constituted one of the reasons why a survey was made to find out whether the students in the course *Spoken and written language* felt the same. Since 2011 the course has been structured according to the blended learning method with both groups – onsite students and distance combined. The structure and services are the same for onsite and distance students – identical for everyone: the lectures were in an auditorium, recorded and made available online. At the end of the 2011 semester a survey was conducted and the results indicated that the experiment had been successful. Therefore, it was determined to use the same method during the autumn semester of 2012[3]. This experiment is what initiated the discussion here, supported by a survey conducted among the course's students in Moodle[4] in 2012, as well as the regular course evaluation surveys on Ugla.hi.is[5] in the autumn semester of 2012. The following research question is namely specified: How realistic is it to stop using the distinction onsite student versus distance student for the course *Spoken and written language* and instead use only the term student?

Preparing the structure for the course, one common course description was made, identical for the two groups of students. A short recording (screen cast) was made available

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[3] And have been done since.

[4] Moodle, Open-source learning platform/Moodle.org

[5] Ugla.hi.is an internal web for University of Iceland

online every week, containing a description of the material for the coming week, a reminder of the reading materials, attendance at lectures and class presentations when it was necessary, and finally, a brief discussion of the projects for the week. These recordings were intended for all students of the course – both onsite students and distance students.

Lectures were held in an auditorium and all students were encouraged to attend. The lectures were recorded on eMission[6], made available online and accessible to all students of the course. Classes with presentations had to be attended by all students of the course. There were no other classes, only individual meetings with the teacher for guidance with regard to research papers. The individual meetings were available to all students, regardless of their residence or enrolment choice. Students could have the interview in person or via Skype, and as before, this was not related to their enrolment choice. The course ended with a written examination.

When students had to be placed in groups for peer assessment of written assignments, which were entirely done online, they were randomly placed into groups of five to six students, regardless of their enrolment choice. The students had to evaluate each other's projects.

In the schedule for the semester[7], two onsite study cycles were published, intended for distance students. During the course, however, the term "onsite study cycle" was never used; instead these were referred to as "onsite sessions". The presentation part of the course was organized around these sessions for all students of the course – both distance and onsite students. It was at the students' discretion as to when they would attend each session.

When dividing the students into groups for class sessions, each group was given a number from one to six. Groups one through three had to attend at the time the classes were scheduled, and groups four through six had to attend the week before the first onsite session and the week after the second onsite session. Students could then change groups as it suited them and eventually the groups were mixed with both onsite and distance students, although those terms were never used.

Method

A survey was done in the autumn semester of 2012 to find out if wiping out barriers between onsite and distance courses had been accomplished successfully. The goal was to measure whether the experiment to delete the distinction between the two groups was successful. The feeling of discrimination with regard to services is very subjective and is related to the theory that has been put forward here: when students choose one of the teaching methods, this automatically implies certain expectations among the students with regard to the services they would receive and the services that other groups would receive. These speculations can also be seen in the conclusions of Björnsdóttir (2012) in her study at the University of Akureyri.

In addition to the 2012 survey, this paper also refers to the course evaluation surveys on Ugla.hi.is for the years 2009 to 2012, where students evaluated the course *Spoken and written language* with regard to factors, such as its structure, how clear its objectives were,

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[6] eMission enables seamless recording and mixing of various media inputs: http://www.emission.is/

[7] At the School of Education class schedules are published twice a year – for the autumn and spring semesters. As a rule, there were two classroom study cycles – one in the beginning of the semester and the other in the middle of the semester.

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how much the instruction was in line with the objectives and how clear the requirements were. These surveys were done on Ugla's web service and cover all students. The university website features the following information with regard to the ideology and implementation of the survey.

Participants

The survey was presented to all students in the course *Spoken and written language* through the educational system Moodle 2.2, to 84 onsite students and 35 distance students. It was open for 11 days, during the period November 22nd to December 3rd. Answers were received from 73 ($n = 73$) students or 61.3 percent, 48 ($n = 48$) onsite students and 25 ($n = 25$) distance students.

Because of how few male are in the Faculty of Teacher Education the results are not looked at by gender; of 73 answers only seven were from men. For the purposes of processing, the respondents were classified into three age groups, 20-34 years, 35-49 years and 50 years of age or older. Since there were too few respondents in the group aged 50 and over ($n = 4$) the age groups 35-49 and 50 years and older were merged for the purposes of analysis.

In addition, a review was done of the students' answers to questions in the course evaluation surveys during these two semesters, where students graded the course's structure and were compared to the answers in the years 2009 and 2010.

A total of 56 respondents were 34 years of age or younger, or 76.7 percent, and 17 or 23.3 percent were aged 35-50 years or older.

Table 2

Number and percentage of respondents by age and enrolment choice

	Onsite	Distance
20-24 years old	n= 42 (57.5%)	n= 14 (19.2%)
35-50 years or older	n= 6 (8.2%)	n= 11 (15.1%)
Total	n= 48 (65.7%)	n= 25 (34.3%)

Onsite students were 48 or 65.7 percent of those who responded to the question regarding enrolment choice, whereas 25 or 34.3 percent were distance students.

Table 3

Number and percentage of respondents by programme and age

	Elementary school teacher	Kindergarten teacher	Pedagogy and education	Other
20-24 years old	n= 42 (57.5%)	n= 8 (11%)	n= 5 (6.8%)	n= 1 (1.4%)
35-50 years or older	n= 10 (13.7%)	n= 4 (5.5%)	n= 1 (1.4%)	n= 2 (2.7%)
Total	n= 52 (71.2%)	n= 12 (16.5%)	n= 6 (8.2%)	n= 3 (4.1%)

The distribution of respondents by programme shows that 52 or 71.2 percent of the respondents were in the elementary school teacher programme, 12 or 16.5 percent were in the kindergarten teacher programme, 6 or 8.2 percent were in the pedagogy and education programme, and 3 or 4.1 percent of the respondents came from other programmes of study.

The responses are examined with regard to the students' enrolment choice (whether they chose to register as onsite or as distance students). Then, the respondents' age was examined, but because the respondents were so few, it was considered impractical to examine the responses with regard to the programme in which students were enrolled.

Survey

The survey had 27 questions that were presented to the students regarding various aspects related to the course; seven were open questions where the participants could express their views regarding questions that had been asked before. The first questions were about the age, gender and enrolment choice of the respondents.

This text discusses the answers to two multiple choice questions related to the structure and services to students as well as the answers to two open questions, which were related to the aforementioned multiple choice questions, and made it possible for students to express their views regarding those questions.

The questions are:
1. Do you believe that there is any difference between the **services** offered to students in the course *Spoken and written language*, who are registered for the course as distance students, on the one hand, and onsite students, on the other hand? [Figures 1 and 2.]

2. Do you believe that there is any difference between the **structure** of the course *Spoken and written language* for onsite students, on the one hand, and distance students, on the other hand? [Figures 3 and 4.]

In the instructions with the survey the words "service" and "structure" were vaguely introduced. By asking about service I was looking at whether the students thought one group got more or better service than the other. The word "service" means how easy it is to get in contact with the teacher, how active the teacher was in answering e-mails and similar things. The second question was about structure: Do you believe that there is any difference between the structure of the course *Spoken and written language* for onsite students, on the one hand, and distance students, on the other hand? By asking about structure I was looking at whether the students noticed or perceived any differences in the structure for either group, for example in the curriculum, on Moodle or elsewhere.

To measure the answers five options were given for both questions:

Much more for onsite students	More for onsite students
Same for both groups	More for distance students
Much more for distance students	

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Other questions in the survey were related to the workload, the listening to brief weekly recordings that were made available online, multiple choice questions related to attendance at lectures and listening to recordings of the lectures, the grade weight and validity of written assignments, peer evaluation, presentations and course evaluation. The answers to some of these questions will be discussed elsewhere. This survey was not pretested, but similar questions were submitted to another group of students the year before and the results were almost the same.

Procedure

A questionnaire was presented to students in the course *Spoken and written language* in the undergraduate programme of the Teacher Education Faculty of the School of Education at the University of Iceland in the autumn semester of 2012. It was conducted at the end of the course in the autumn of 2012. Students were asked whether they experienced any differences in the course structure or service for onsite students, on the one hand, and for distance students, on the other. In addition, students were asked about their attitude to the service they received, with regard to the surveys conducted by Jóhannsdóttir and Jakobsdóttir (2012) and Björnsdóttir (2012) and whether the students had the feeling that the services offered to both groups were the same or not.

The survey was presented to the students through the educational system Moodle 2.2, which is an open-source learning platform that was used for the course material so it was familiar to the students. Surveys in the Moodle 2.2 system are anonymous and answers cannot be traced through the computer system. The results were imported and processed in SPSS 2.1.

Results

The results of the survey for the two selected questions about whether the students think there were any differences in the course's structure between what services are offered to onsite students versus distance students show that they have the feeling that there were small differences.

Students were asked whether the structure was designed to suit more or much more for onsite students, on the one hand, or distance students, on the other hand. Because of the low response rate, the features "more" and "much more" were combined for calculation purposes.
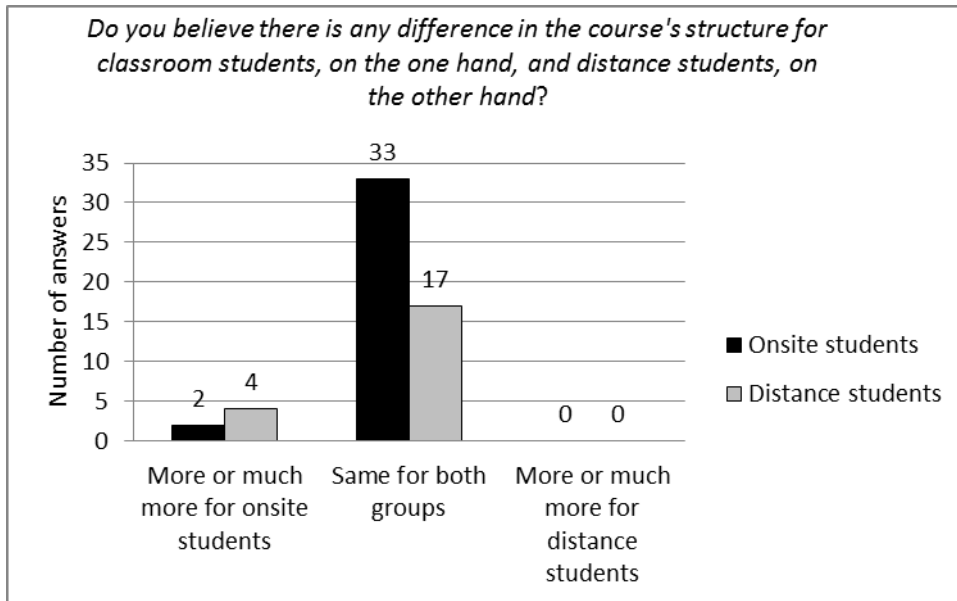
Figure 1. Enrolment choice. *Do you believe there is any difference in the course's structure for onsite students, on the one hand, and distance students, on the other hand?* (n = 73, P = 0.161)

A total of 33 onsite students of 48, or 68.75 percent, believed that the course's structure had been the same for both groups, as did the same percentage, 68 percent of distance students, or 17 out of 25. Almost a quarter of the respondents, or 17 of 73 respondents, chose not to answer. Interestingly, none of the respondents thought that the course was structured to suit distance students better. There is no significant difference in the responses of onsite students and distance students.

Although the focus is primarily on the views of onsite students and distance students, it is interesting to investigate whether there are any differences with regard to age.
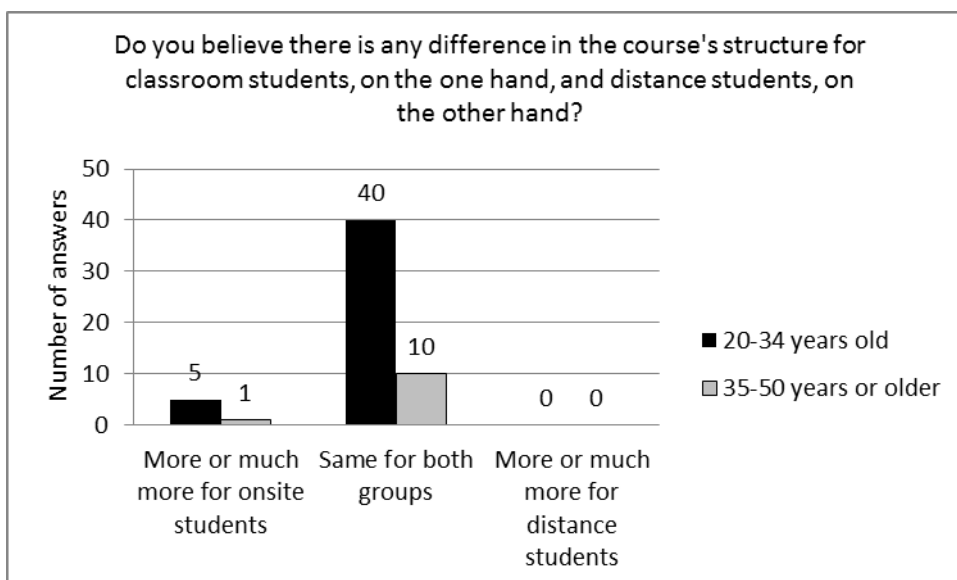

Figure 2. Age distribution. *Do you believe there is any difference in the course's structure for onsite students, on the one hand, and distance students, on the other hand?* (n = 73, P = 0.09)

The students' experiences of the course's structure vary little with regard to age. There are, however, slightly more students aged 20-34 years, or 71 percent, who experience no difference in the course's structure compared to the respondents in the group 35-50 years. Of them, 59 percent or 10 experienced no differences. Five students, or 9 percent, in the younger group thought the course was structured to suit onsite students more. Seventeen students chose not to answer. There is no significant difference in the responses of onsite students and distance students.

Students tend to experience differences in the services provided to them, according to their enrolment choice. Distance students believe that they receive different services than onsite students. Emphasis was placed on structuring the course in such a way as to integrate the services as much as possible.

Students were asked whether they believed there was any difference in the services provided to onsite students, on the one hand, and distance students, on the other hand. Because of the low response rate, the features "more" and "much more" were combined for the purpose of calculations.

Figure 3. Enrolment choice. *Do you believe there is any difference between the services offered to students who are registered in the course as distance students, on the one hand, and onsite students, on the other hand?* ($n = 73$, P = 0.029)

A total of 28, or 58 percent of onsite students, and 14, or 56 percent of distance students, thought the services provided to the two groups were the same. A total of 14.6 percent of distance students, or 7, believed that onsite students had received better or much better services and 2 onsite students thought distance students had received better services. A total of 21 students did not answer this question. This result shows a significant difference between the onsite students and distance students. More distance students believe that onsite students receive better services. Differences between the age groups were also examined.

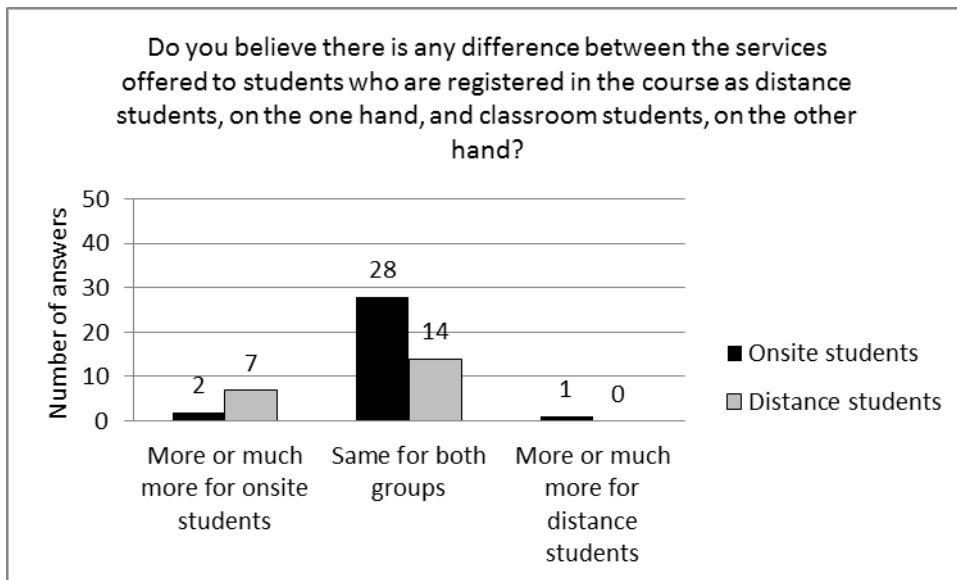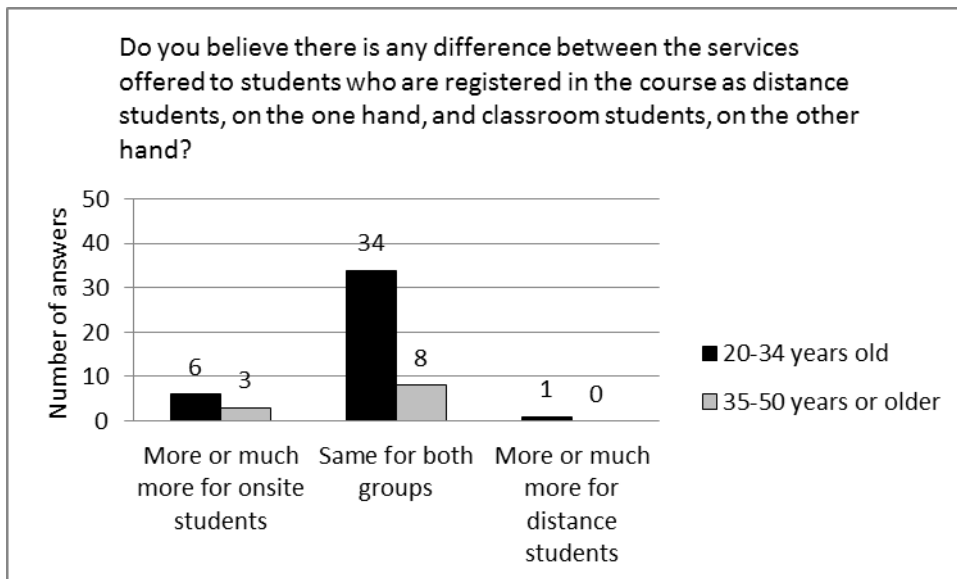*Figure 4.* Age distribution. *Do you believe there is any difference between the services offered to students who are registered in the course as distance students, on the one hand, and as onsite students, on the other hand?* (*n = 73*, P = 0.876)

When age distribution is taken into account, 34 students or 60.7 percent of the younger group, believed the services were the same, whereas 6, or 10 percent of this same group, thought onsite students received better or much better services. Eight, or 47 percent, of the students who were 35-50 years or older experienced no difference in the provided services. One student thought services were better or much better for distance students and 21 did not respond. The difference was not significant, however.

Few responses were received to the open-ended questions related to the course structure and services, and some of the answers were actually comments on something different from or other than what the question asked.

There was a complaint regarding the lecture recordings: "It is very disturbing that the lectures are constantly being recorded and consequently when someone says something it is always being repeated, and therefore I have not asked a single question this semester. I cannot handle it when everything one says is repeated because then I do not remember what I wanted to say and therefore I do not ask anything."

There was the exact opposite comment from one participant: "The teacher should remember to repeat the students' questions during lectures so that distance-learning students can also hear them."

There was also a comment regarding a Facebook group that was not related to the course, so this must be due to a misunderstanding of some sort: "I find it intolerable to have distance students in the Facebook group because they have questions that do not concern our studies and have a disturbing effect. Last week someone asked where the lecture hall Bratti was located. And a lot of questions that have a completely confusing effect. Sometimes I get shocked because I have forgotten to do this or that, that I do not actually need to do but distance students need to do."

Otherwise, some students made comments in this box regarding the arrangement for essay submission and distance students' difficulties in using the library: "Although everyone has good intentions to provide the necessary services to distance students, there are still certain shortcomings, for example, it is difficult to obtain course materials from the library,

because not all materials are borrowed and therefore it is not possible to take advantage of all that I want, if the school library is a long way away." And: "The main problem for distance students may be obtaining diverse sources for research essays."

Finally, two participants answered the following: "[I] have not acquainted myself with this so [I] cannot really answer this." "I don't have information about the programme and the services for distance students."

Course evaluation survey

The course evaluation survey that students are asked to answer in the teaching system Ugla.hi.is at the end of each semester includes questions about the course structure. It can be said that the question is related to the research question in this paper regarding the course structure, and this evaluation can be an indicator of how successfully the two study programmes − onsite and distance study − have been mixed, and the course organized, so that the students see no difference between onsite and distance student groups.

The course evaluation survey includes the following statement: "The course is well organized." The possible answers are: "Strongly agree", "agree", "neutral", "disagree", and "strongly disagree". A rating of 1 to 5 is given.

Table 4

Average rating for the course; 5.0 is the highest

Year	Average grades SWL[8]	Average grades Faculty of Teacher Education	Average grades School of Education
2009	3.91	4.00	4.03
2010	3.37	4.06	4.05
2011	4.24	4.1	4.13
2012	4.29	3.89	4.01

Table 4 shows that the ratings between the years 2009-2012 steadily rose. In 2009, the course got a score of 3.94 out of 5 for its structure, but fell in the autumn semester of 2010 to 3.37, when, for the first time, the onsite and distance courses were taught under one course code instead of two. The average score for the course for 2011 was 4.24 out of 5.0, and 4.29 for 2012. In 2011 and 2012, the course scored well above average both within the Teacher Education Faculty, with a score of 4.1 and 3.89 respectively, and within School of Education faculties combined, with a score of 4.13 and 4.01 respectively.

Discussion

No significant difference can be observed in the students' answers to the question as to whether they experienced any differences in the course structure for onsite students, on the one hand, and for distance students, on the other hand. It became clear that 68 percent of both groups believed there was no difference. A similar percentage is obtained if the responses are examined with regard to age. It is therefore quite clear that students do not see any difference

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[8] SWL = Spoken and written language.

between the two groups. This result can be considered very positive and supports the theory that it is possible to organize courses without using the concepts "onsite student" and "distance student".

However, there is a significant difference in the responses of onsite students and distance students when they were asked whether they believed the services provided to students of the two groups were the same. As expected, distance students believe that they received worse services than onsite students. This is entirely in line with the results from Jóhannsdóttir and Jakobsdóttir (2012) and Björnsdóttir (2012). This result implies that the course could be improved, for example, by making students more aware of the services available to them from the beginning and for whom the services are intended, for example, with a short recording, where it is specifically explained that all course material is the same for both groups and available at a joint course web page. It should be made explicitly clear that there is only one common group of students.

The answers to the open questions often contain complaints, such as: "The lectures are constantly being recorded and consequently anything the students said had to be repeated, and therefore I have not asked a single question this semester," which is a problem associated with recording lectures in an auditorium and has nothing to do with the distinction between onsite and distance students since both groups use the recordings. This can be best solved by all students sitting at the same table and the lectures being recorded without an audience and then sent to all students in the course, both onsite and distance students, as was done in the autumn semester of 2013. The flipped learning approach would be very appropriate in this case.

The results of the course evaluation survey in 2012 support this conclusion because students gave the course structure the grade 4.53 out of 5, and the grade for the course as a whole was 8.28 out of 10. It is certainly debatable as to what exactly is the perceived meaning of the concept "structure", but it should be clear that whatever the definition, students have not experienced any lack of organization or confusion due to the disuse of the concepts onsite study, onsite student, distance study and distance student. It is clear that the proposed structure functioned well.

Conclusion

The limitation of this research is how narrow it is. It is based on one survey conducted following one specific course. All kinds of factors might affect the results, including the curriculum, the teacher, the recordings given or other matters. These results, however, indicate that it is possible to combine onsite and distance courses and only use the concepts "study" and "students". The course *Spoken and written language* is a good example of putting this into practice – from the year 2011, the course has been organized as a combined course, removing the distinction between onsite and distance teaching. The concepts of onsite study, onsite student, distance study, distance student never mentioned, only *"study"* and *"students"*.

This study therefore supports the opinion that it is possible to reconsider the structure of courses that include both onsite and distance students. It answers positively the question asked at the beginning: are the concepts of onsite study and distance study outdated? The results show that it is possible to plan a course using a single course number for both onsite and distance students without them noticing discrimination between the two groups and "only" use the concepts study and students.

Planning and offering both onsite and distance courses, separated, with the same material is therefore something that should belong to the past. Now it is time to rethink the organization of study by wiping out those distinctions and use only the concepts *"study"* and *"students"* and take the final step into the 21st century.

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Examining Elementary Literacy Teachers' Perceptions of their Preparedness to Implement the English Language Arts Common Core State Standards

Melissa Adams-Budde* Samuel Miller**

Abstract

The purpose of our study was to examine elementary literacy teachers' perceptions of their preparedness to implement the ELA CCSS. We defined preparedness across three dimensions: teachers' perceived levels of knowledge of the standards and its components; efficacy to implement changes; and actual changes to their instructional practices. A survey was developed based on the literature and administered to 158 elementary school teachers in two districts. Findings document the nature of their professional development and identify areas where additional development opportunities are necessary. While all teachers reported receiving professional development on the ELA CCSS, they varied in knowledge ratings across various dimensions of the standards, self-efficacy ratings, and the degree they reported implementing changes in their practice with the introduction of the ELA CCSS. Discussion focuses on the need to provide more time and supports to teachers as they deal with the challenges of the new standards.

Keywords: English Language Arts Common Core State Standards, teacher preparedness, instructional change, professional development

Introduction

The Council of Chief State School Officers (CCSSO) and National Governors Association (NGA & CCSSO, 2010) initiated a voluntary, state-led effort, to create a common set of internationally benchmarked standards in English/language arts and mathematics for K-12 students. Referred to as the Common Core State Standards (CCSS), they underscored the need for "fewer, clearer, and higher" standards to identify what high school graduates should know to be ready for the challenges of college and career (Rothman, 2012). While representing an important first step in school reform, critical questions remain about the degree to which teachers are prepared to implement the CCSS.

For several reasons, answers to questions of teachers' preparedness are not readily forthcoming because of how researchers' have conducted their studies. First, for most evaluations, state and district officials mainly serve as the respondents; (Anderson, Harrison, & Lewis, 2012; Council of the Great City Schools, 2012; Kober, McIntosh, & Rentner, 2013; Kober & Rentner, 2011a; Kober & Rentner, 2011b; Kober & Rentner, 2012; McMurrer & Frizzel, 2013; Murphy & Regenstein, 2012; Rentner, 2013a; Rentner, 2013b; Rentner, 2013c); consequently, whether their evaluations of preparedness match teachers' can't be determined. Second, when teachers are the main respondents, researchers usually compared their general estimates of competence to teachers in other schools, districts, or states (ASCD, 2012) or simply provided broad estimates of preparedness based on single survey items (AFT, 2013; Editorial Projects in Education Research Center, 2013; Scholastic, & Bill and Melinda Gates Foundation, 2013; Walker, 2013). It is not known whether teachers' perceptions of general preparedness might vary

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according to particular dimensions of the CCSS (e.g., theoretical perspectives of literacy, use of informational texts, need for close reading, etc.); ability to teach certain students (e.g., low-achievers, ESL, & special education); levels of preparation resulting from professional development activities; or certain entry level characteristics such as graduate degrees or years of experience (Clotfelter, Ladd, & Vigdor, 2007; Goldhaber & Anthony, 2007; Kane, Rockoff, & Staiger, 2008). Finally, researchers have commented on the challenges of implementing the new standards without considering teachers' perspectives on this topic (Beach, 2011; Kober & Renter, 2012; Sawchuk, 2012; Shanahan, 2013). Once again, whether teachers agree with these suggestions or would offer additional challenges can't be determined from the existing research. This study addresses these issues by asking teachers directly about their preparedness to implement the CCSS into practice, not just in general, but in terms of various dimension of the standards and student populations, as well as asking teachers directly about the challenges they face in the implementation of the CCSS standards.

This study adopts a social constructivist perspective, which highlights teachers' active engagement in constructing new knowledge and understanding through participation with others in activities and experiences (Vygotsky, 1978). As teachers engage in learning experiences and professional development around the standards, they actively and collectively make meaning of the standards. Beliefs about teaching and learning serve as a filter through which teachers process new knowledge and substantially influence their judgments and actions in the classroom (Levin & He, 2008). In addition, teachers' beliefs influence choices relating to topics to teach and instructional strategies to adopt (Bandura, 2006; Chrysostomou & Philippou, 2010; Pajares, 2006; Richardson, 1990).

To gain a more thorough understanding of teachers' perceptions of their preparedness to teach the CCSS, we sought a multi-dimensional view of readiness; a more complete understanding of how professional development activities might promote it; and a formal evaluation of whether professional development and other entry level characteristics predicted their preparation levels. Accordingly, we identified three levels of teachers' preparedness: (a) their understanding of the CCSS and its components, (b) their confidence to use this knowledge to align instructional practices with CCSS's expectations; and (3) actual changes in their instructional practices (Duffy, 2005; Schraw, 2006). Having knowledge of the CCSS and its subtopics serve as an important first step towards developing preparedness, requiring a reconciliation between past and newly acquired knowledge; confidence or efficacy serves as mediator between knowledge and teachers' actions to align instruction, likely influencing the degree to which teachers use knowledge to make instructional changes (Bandura, 1986; Emmer & Hickman, 1991; Giallo & Little, 2003; Ormrod, 2006); and existing changes in instructional practices serve as an indicator of teachers' ability to apply knowledge given their confidence and knowledge levels (Bandura, 1986; Berliner, 2004; Turner, 2006; Zimmerman, 1998).

While professional development likely influences teachers' preparedness, research shows how the quality, quantity, content of its activities; how it is formatted; and who presents the information influences its effectiveness (Birman, Desimone, Porter, & Garet, 2000; Learning Forward, 2012; McLaughlin & Overturf, 2012). Even with quality professional development, researchers still believe teachers need long-term and ongoing support because CCSS represent a major change in focus and emphasis from prior reform efforts (ASCD, 2012; Hall & Hord, 2011; Murphy & Regenstein, 2012; Wixson, 2013). To evaluate professional development, recommendations from two leading researchers, Guskey (2009) and Desimone (2009), were combined to produce the following criteria: time (duration); collaboration in problem solving (active learning and collective participation); school-based orientation; strong leadership; content

focus; and coherence. Our next consideration was to examine years of teaching experience, additional degrees, coursework, or any qualifications that likely played a role in shaping teachers' perceptions of their preparedness (Clotfelter, Ladd, & Vigdor, 2007; Goldhaber & Anthony, 2007; Kane, Rockoff, & Staiger, 2008; Smith & Strahan, 2004).

This study offers both theoretical and practical implications for studying the adoption of new learning standards. In terms of theoretical implications, it supports the need for researchers to adopt a multi-dimensional perspective of teacher preparedness, in which preparedness is not viewed as single entity, but rather one that is multifaceted and varied. With regard to practical implications, it moves the discussion beyond simply asking teachers if they are ready to implement the new CCSS, to asking them about their readiness in terms of their knowledge of the standards, their self-efficacy to implement the standards into practice, and the degree of changes in practice they have made. In addition, it looks at the extent to which this readiness applies to specific dimensions of the CCSS and not others.

To limit the scope of the study, we focused on English Language Arts Standards at the elementary grade levels in two school districts. The following research questions guide this effort:

1. To what extent do teachers feel prepared to implement the ELA CCSS?
    a. What level of understanding do teachers have regarding the ELA CCSS and its components (e.g., topics, general standards, & assessment)?
    b. How do teachers rate their efficacy to teach the ELA CCSS?
    c. What changes do teachers report making to their instruction to meet the expectations of the new ELA CCSS?
2. What types of professional development have teachers received?
3. How do they rate the quality of their professional development opportunities?
4. To what extent are teachers' evaluations of their preparedness (i.e., knowledge of components, general efficacies, & instructional changes) predicted by teacher (e.g., advanced degrees, years of experience) & school characteristics (rural versus urban), and professional development?

Methodology

This study utilized a cross-sectional survey with data collected at one point in time from participants at 20 elementary schools in two school districts (Creswell, 2003). The survey was administered online to participants using Qualtrics software.

Population and Sample

Elementary English language arts teachers from two school systems in a southeastern state participated in the study. System A is a county system with 15 elementary schools, four middle schools, five high schools and one alternative school. Based on state-mandated 2012-2013 accountability assessments, eight of its elementary schools met expected growth, four exceeded expected growth, and three failed to meet expected growth. The county has 1,042 licensed, full-time employees of whom 575 hold masters or advanced degrees, 11 hold doctoral degrees, and 149 achieved national board certification. The county serves more than 13,000 students. The ethnic composition of the student population is 63.2% white, 20.4% black, 10.7% Hispanic, 4.9% multi-racial, .4% Asian, and .4% American Indian. Fifty-nine percent of students received free or reduced lunch. The graduation rate in 2011-2012 was 76%.

System B is located in a small city, comprised of five elementary schools, two middle schools, one high school and one early childhood center. According to 2012-2013 assessments, two elementary schools met expected growth requirements, one exceeded expected growth, and two failed to meet expected growth. The city system has 438 certified staff members of 152 hold advanced degrees and 52 are national board certified. Approximately 4,700 students are enrolled in the school district of which 40.3% are white, 15.2% are black, 38.7% are Hispanic, 1.5% are Asian, 0.3% are American Indian and 4.13% are multi-racial. In the 2013-2014 school year, 73.65% of the students qualified for free or reduced lunch. The high school graduation rate for 2013 was 86.3%.

All elementary English language arts teachers from both school systems were invited to participate in the study at the request of the school district. The response rate for teachers in School System A was 50% (n = 123) and the response rate for teachers in School System B was 29% (n = 35).

Instrumentation

Data was collected using an online survey which participants received a link to via email using the Qualtrics program. The two authors designed the survey using the Editorial Projects in Education (EPE) Research Center's survey as a foundation (Editorial Projects in Education Research Center, 2013). This survey was designed for teachers and provided the most comprehensive framework for evaluating teachers' perceptions of preparedness. Questions were modified or added to (a) collect more detailed information on teachers' professional development, such as the number of opportunities, hours, and quality ratings for professional development offered by a variety of entities; (b) to determine teachers' knowledge rating of specific components and topics related to the ELA CCSS; (c) to elicit more specific information on teachers' efficacy to implement instructional changes, and (d) to identify how teachers changed their instructional practices as a result of Common Core implementation. The final survey consisted of 37 survey items, 10 with multiple questions, across 5 categories: background information (e.g., How many years of teaching experience do you have?), professional development experiences (e.g., Which of the following topics have been addressed in your formal professional development? Check all that apply.), perceived knowledge of the standards and its components and topics (e.g., Please rate your overall level of understanding of the College and Career anchor standards.), self-efficacy to implement the standards (e.g., On a five-point scale, where 5 is "Very Prepared" and 1 is "Not at All Prepared," how prepared do you personal feel to teach the ELA CCSS to the following groups of students (all students, ELLs, students with disabilities, low income students, academically at-risk students)?), and reports of changes in instructional practice (e.g., Rate your level of agreement with the following statement, "My practices have changed with the ELA CCSS.). Thirty-five survey items had a closed response format and 2 were open-ended. Of the 35 closed response items, 20 were Likert scale items and the remaining 15 were multiple choice items that elicited information on participants' background or more detailed information, such as the format(s) and provider(s) of their professional development opportunities, topics addressed in professional development, materials and planning consideration as well as instructional teaching strategies from the previous week of teaching.

The construct validity of the content of the survey was determined by analyzing the different components of the ELA CCSS, a review of established survey instruments, and a review of the research literature (Litwin, 1995). The survey instrument was shared with experts in the

field; in literacy, the ELA CCSS, and educational measurement; and revised based on feedback. These actions allowed us to determine its content and face validity. We looked at convergent validity and reliability by establishing constructs with a factor analysis and looked at correlations between constructs to note positive relationships. As a final step, we then piloted the survey and asked recipients to note any areas of misunderstanding; then we looked at variability of individual items to see if variances were equivalent among items and normally distributed. The internal reliability of the survey was determined using Cronbach's alpha rating for each of the summary scores dealing with teachers' attitudes and beliefs: knowledge, self-efficacy, instructional change, and professional development quality and were .81, .85, .82, and .71, respectively (Howell, 2007).

Coding and Analysis

Open-ended survey items were coded following Miles and Huberman's (1994) recommendations of data reduction, data display, and drawing and verifying conclusions. In phase one, participants' responses were open-coded and organized in a three-column chart with researcher notes. In phase two, codes were refined into common categories and a table was created with categories and corresponding responses. Frequency counts were used to determine the most commonly referenced responses. Finally, phase-three involved the creation of thematic codes by collapsing the categories from phase two into major themes (Merriam, 1985).

Analyses of the closed-ended items included two steps. The first included a descriptive analysis to see if each item demonstrated appropriate levels of distribution (skewness $\leq \pm 2.0$) for conducting parametric analyses. For multi-options multiple-choice items, percentages were calculated for the total number of respondents who selected each answer choice. The second analysis addressed the first three research questions, including related sub-questions. Repeated measures ANOVAs compared differences; when significance was found, Bonferroni's pairwise comparisons were utilized; whenever the assumption of sphericity was violated, Greenhouse Geisser corrections were used to adjust the degrees of freedom (Howell, 2007). For the final question, scores were calculated for teachers' knowledge, self-efficacy, and instructional change by adding teachers' responses to the items in each respective area. Similarly, summary scores were calculated for factors influencing teachers' preparedness: professional development opportunities, professional development hours, professional development quality, years of experience, educational qualifications and school group. Forward selection multiple regressions determined factors that predicted variances in teachers' knowledge, self-efficacy, and instructional change scores: this method was selected because of a lack of an existing theory regarding factors most likely to influence teachers' perceptions of preparedness (Field, 2013).

Results

Results were first separated by school district; however, when no significant differences were found (independent t-test, Howell, 2007), data were combined for subsequent analysis. Consistent with the order of research questions, findings will be shared below for teachers' perceptions of preparedness, in terms of their ratings of their levels of knowledge, self-efficacy, and reported changes; for teachers' professional development experiences; and for influences on teachers' perceptions of their preparedness.

Perceptions of Preparedness to Teach the ELA CCSS

Knowledge. In evaluating perceptions of preparedness for implementing the ELA CCSS, teachers' knowledge of standards and its components were evaluated. Two sets of questions with eleven items asked teachers' to rate knowledge of the standards, its components and topics, and corresponding assessments on a scale with 4 representing very knowledgeable and 1 representing not at all knowledgeable. In descending order, means and standard deviations for 158 respondents were (a) different types of informational texts (3.24, .59), (b) content area literacy instruction (3.05, .57), (c) instructional strategies for teaching complex texts (2.85, .70), (d) foundational skills (2.90, .64, (e) close reading of text (2.82, .66), (f) ELA CCSS (2.80, .91), (g) CCR Anchor Standards (2.23, .85), (h) new state assessments (2.08, .72), (i) technology enhanced state assessments (1.92, .69), (j) performance tasks on state assessments (1.92, .74). and (k) constructed responses on state assessments (1.90, .74).

A repeated measures ANOVA (F (6.245, 980.428) = 101.878 $p < .001$, $\eta_p^2 = .394$) yielded significant differences and post hoc tests ($p < .05$) revealed ratings for understanding of the ELA CCSS and its topics (e.g., close reading, types of informational text, complex text, content area literacy instruction, and foundational skills) as significantly higher than knowledge of the new state assessments and corresponding new question formats, as well as knowledge of the CCR Anchor Standards. Teachers' knowledge of standards and its components were rated higher than knowledge of the aligned assessments and their question formats. The one exception is that teachers rated knowledge of the CCR Anchor Standards lower than their other knowledge of the standards.

Self-efficacy. In evaluating self-efficacy, five items were used. Two asked teachers to rate level of preparedness for teaching different populations of students and compare it with that of their colleagues, school, district, and state. Two asked if teachers had the necessary materials, resources, and supports to be self-efficacious. One open-ended item asked teachers to list the challenges they faced implementing the standards into practice.

In descending order, means and standard deviations for 158 respondents with the teaching of different populations on a five-point scale were (a) teaching students in general (3.92, .74), (b) low income students (3.60, .90), (c) academically at-risk students (3.43, .91), (d) English language learners (3.19, .93), and (e) students with disabilities (3.17, .90). A repeated measures ANOVA, F (3.217, 498.690) = 52.477, $p < .001$, $\eta_p^2 = .253$) and post hoc tests ($p < .05$) showed ratings for teaching students in general were higher significantly than ratings for teaching English language learners, students with disabilities, low income students, and academically at-risk students. Also, teachers' perceptions of preparedness to teach students with disabilities had the lowest rating and differed significantly from their efficacy to teach all groups, except English language learners. When asked to compare preparedness to other groups (peers, school, district and state), teachers' means ranged between 3.31 and 3.73 on a five-point scale. A repeated measures ANOVA, F (2.781, 433.791) = 25.138, $p < .001$, $\eta_p^2 = .139$) followed by pairwise comparisons showed how teachers' ratings of confidence in their state was significantly lower than their confidence in themselves, colleagues, school, and district.

Two sets of items examined what teachers needed to improve their efficacy. Teachers' need for textbooks and other curricula materials was rated higher than a need for additional informational text. A repeated measures ANOVA F (1.00, 155) = 76.883 $p < .000$, $\eta_p^2 = .332$) confirmed this difference. Teachers then identified additional factors that could help them to become more confident. Teachers selected multiple responses from a list of eight options or

wrote in their own response. More than 80% of teachers selected between three and seven factors with the emphasis on the more practical applications of knowledge: a criterion of 50% was used to designate frequently cited needs. They included a need for more planning time, collaboration with colleagues, access to curriculum resources aligned to the standards and assessments, and more professional development; less frequently selected needs included more information about how the standards will change instructional practices, how the standards will change what is expected of students, and how the ELA CCSS differed from state's standards prior to the CCSS.

In addition to self-efficacy ratings and items relating to needs for improving self-efficacy, teachers listed what they considered to be challenges to teaching the ELA CCSS. One hundred twenty-three teachers (84%) responded to this open-ended item providing an initial list of 20 challenges: they were collapsed into six thematic codes. The most commonly cited challenge was a lack of resources and materials aligned with the standards, followed by the need for additional time. Teachers cited the need for more time to plan, to collaborate with colleagues, to understand the standards fully and adapt their instruction, and to teach students everything that was expected. Teachers described challenges related to assessments as figuring out how to assess the standards, the increased rigor of the assessments, the frequency with which they were expected to assess student learning, and communicating with parents.

Instructional change. Eight sets of questions examined teachers' reports of instructional changes. Eighty-nine percent of teachers agreed or strongly agreed that the ELA CCSS required major changes and 90% agreed or strongly agreed that their instructional practices had changed (mean scores for these items were 3.12 and 3.10 respectively on a 4.0 scale). As a follow-up, teachers rated the degree to which they already implemented the standards into their practices: 37% reported that they were incorporated into some areas of their teaching, while 63% reported that they were fully incorporated into their practice. The next set looked closely at the extent to which teachers reported implementing changes. The greatest changes were in reading (71%), followed by writing (64%), science (51%) and social studies (46%). A repeated measures ANOVA determined the mean values for change in practices differed significantly, ($F(2.049, 315.949) = 35.014$, $p < .001$, $\eta_p^2 = .183$): post hoc tests revealed no difference for changes in reading and writing practices; however, changes in reading and writing were higher than changes in science and social studies practices, which did not differ significantly.

The third set of questions examined teachers' previous week's literacy instruction by looking at their planning and instructional activities. These questions were included to implicitly ask teachers about instructional changes. The first item asked teachers to report the materials used during planning; teachers could add responses. During planning, using a criterion of fifty percent, teachers mainly relied on district's pacing guides, the ELA CCSS, and self-created or borrowed materials. Less frequently materials were from a core (basal) program or supplementary program, from professional sources such as books and journals, and results from student assessment data. More than 80% of teachers reported using three to eight resources when planning instruction. Additionally, when asked to identify their thinking during planning, every option received more than a 50% rating with the highest on developing critical thinking questions, identifying strategies for differentiation, considering unfamiliar vocabulary, and engaging students in discussions.

An additional item asked teachers about the frequency with which they employed particular instructional strategies or practices in their previous week's instruction. Strategies were placed into one of three categories: the most frequent strategies were used by at least 80% of teachers, middle category strategies included those used by 50% and 80% of teachers, less frequently used strategies were used by fewer than 50% of teachers. Most frequently

implemented strategies included discussing ideas presented in a text, reading informational text, reading a text multiple times, providing text evidence to support ideas, setting a purpose from reading, reading challenging text, and evaluating ideas presented in a text. Middle category strategies included analyzing text features, applying learning to the real world, evaluating author's purpose, comparing content across texts, providing evidence to support ideas when writing, analyzing text structure, and highlighting or annotating text. Less frequently used strategies were taking notes on a text read, writing narrative text, writing informational text, analyzing different authors' perspectives on the same content, researching a topic, and writing argumentative text. The same pattern was discovered when teachers were asked on an open-ended question to describe how their instruction had changed as a result of the new standards.

Professional Development

The next set of analyses focused on teachers' professional development. Teachers entered the number of opportunities and hours of professional development provided by their school and district, state, professional organizations, colleges or universities, or other entities and rated the quality of each. Additional items asked about presentation format, provider, and topics addressed. Teachers reported the amount of time they spent outside of formal professional development learning about the standards from a variety of sources (e.g., district and state websites, professional organization, general news and media). The final item asked teachers to rate the quality of professional development experiences relative to standards for effective professional development.

The greatest number of opportunities occurred at the school (56%) and district (30%) levels, followed by professional organizations (7%), the state (4%), and a college or university (3%). Accordingly, school and district professional development required a high percentage of teachers' time (78%), followed by professional organizations (8.5%), colleges or universities (8.5%), and the state (5%). Similarly, the majority of teachers attended professional development at the school and district level (88% and 84%, respectively), followed by professional organizations (22%), the state (16%) and colleges and universities (13%). Per these findings, teachers had about five opportunities at the school with each session averaging about two hours and two to three opportunities at the district level with each session lasting about five hours. In most opportunities, presenters used structured settings such as seminars, lectures, or conferences (31%), collaborative planning time with colleagues (29%), and professional learning communities (18%). Job-embedded training or coaching (10%) and online webinars or videos (10%) were less commonly employed. The majority of teachers, an estimated 8 of 10, experienced two, three, or four formats across professional development opportunities, with the three previously stated formats being the most common with more than 80% of opportunities presented by a staff member from their school, another school, or the district office.

When reviewing topics covered during professional development, a criterion of 50% was used to designate a frequently addressed topic. Of the 15 topics listed, six met this criterion. The top three included the CCSS in English Language Arts, the CCSS in Mathematics, and the alignment between the CCSS and the state's previous standards, followed by the teaching higher order and critical thinking, integrating literacy into the content areas, and collaborating with colleagues to teach the standards. Less commonly addressed topics included curricular materials and resources to teach the standards, teaching informational text, adapting classroom assessments, key shifts from previous standards, research on best practices, teaching close and critical reading, teaching to specific groups of students (e.g., students with disabilities and

English language learners), determining text complexity and/or teaching complex texts, and new state assessments developed by the multi-state consortia. With the exceptions of literacy in the content areas and higher order thinking skills, all of the commonly addressed topics dealt with the standards from a general perspective.

Because professional learning occurs outside the context of formal professional development experiences, teachers also estimated amount of time they spent learning about the ELA CCSS from a variety of informational sources. Greater than 90% of teachers turned to outside sources to learn more about the ELA CCSS with district and state websites being the most frequented portals.

Teachers rated the quality of professional development experiences on a 5-point scale. Teachers rated the quality of professional development experiences provided by their school (M = 3.34), district (M = 3.43), and state (M = 3.54) lower than those offered by colleges and universities (M = 4.03) and professional organizations (M = 4.21). Because the number of teachers who participated in the professional development provided by different entities was unequal, the only statistical comparison was between ratings for the state and district (Howell, 2007). A repeated measures ANOVA (F (1,128) = 1.506, p =.222, η_p^2 = .012) revealed no difference in teachers' ratings for the school and district.

The next analysis examined ratings of the extent to which the professional development adhered to recommended professional development standards. Mean ratings ranged from a high of 3.21 to a low of 2.68 on a 4.0 scale. Teachers' ratings were found to be significantly different using a repeated measures ANOVA (F(4.650, 725.356) = 49.312, p < .001, η_p^2 = .240) with post-hoc comparisons (p < .05) revealing a higher overall rating for two items; teachers rated the presence of collaborative environments and support from school leadership for professional learning as the most frequently implemented standards.

Influences on Teachers' Perceptions of Their Preparedness to Teach the ELA CCSS

The final analyses looked at the extent to which perceptions of preparedness (i.e., knowledge, self-efficacy, and instructional change) was predicted by teacher (e.g., advanced degrees, years of experience) and school characteristics (e.g., rural versus urban) and professional development experiences.

The first analysis examined predictors for knowledge of the ELA CCSS. Four significant correlations existed between the knowledge and professional development quality ratings (p < .001), educational qualifications (p =.001), professional development hours (p = .002), and professional development opportunities (p = .020). A forward selection multiple regression revealed significant differences in knowledge (F(1,155) = 8.621, p = .004; r = .367) to be predicted by their perceptions of the quality of professional development opportunities (R^2 = .087: Adjusted R^2 = .081) and educational qualifications (R^2 = .135; Adjusted R^2 = .124). The second examined predictors for self-efficacy. Two significant correlations existed between self-efficacy and professional development quality ratings (p < .000) and professional development hours (p = .002). A forward selection multiple regression revealed significant differences in efficacy (F(1, 156) = 29.381, p < .000; r = .398) to be based on teachers' perceptions of the quality of their professional development opportunities (R^2 = .158: Adjusted R^2 = .153). The third analysis examined predictors for instructional changes. Five significant correlations exist between instructional changes and professional development quality ratings (p < .000), professional development hours (p < .000), professional development opportunities (p = .014),

years of teaching experience (p = .011), and educational qualifications (*p* = .033). A forward selection multiple regression revealed significant differences in instructional change ($F(1, 153)$ = 6.030, p = .015; r = .455) based on the time spent in professional development, teachers' perceptions of the quality of their professional development opportunities, years of experience, and educational qualifications (R^2 = .207: Adjusted R^2 = .187).

Discussion

The use of a multidimensional view of teachers' preparedness to teach ELA CCSS revealed important differences in their knowledge of the standards and its components, confidence to use this knowledge to teach different student populations, and actual changes in classroom instruction**.** Teachers rated their general knowledge of the standards and of informational texts, content area literacy instruction, instructional strategies for teaching complex texts, foundational skills, close reading of text higher than their knowledge of the assessments and CCR Anchor Standards. Educational qualifications and perceptions of the quality of professional development activities were the best predictors for knowledge. Next, efficacy for preparing students in general was higher than their efficacy for teaching specific groups of students, such as students with disabilities, low-income students, academically at-risk students, and English language learners. Perceptions of the quality of the professional development activities were the sole predictor for teachers' efficacy. When asked about preparedness in terms of actual changes in instructional practice, practically every teacher believed the standards required fundamental changes in practice and reported making adjustments to instruction; however, these changes were most obvious in reading, with fewer modifications occurring in writing, science, and social studies. Perceptions of the quality of professional development activities and teachers' years of experience and educational qualifications best predicted variance on this measure.

Teachers' preparedness across the three dimensions---knowledge, efficacy, and actual instructional changes-- aligned closely with districts' efforts to provide support. Districts' professional development mainly addressed standards from a general perspective, with most of the emphasis on the language arts and mathematics standards and the alignment between them and the state's previous standards. While districts emphasized topics such as informational text, content area literacy, foundational skills and close reading, there was little, if any, emphasis on how teachers might use this knowledge outside of reading or how teachers might use it to teach specific populations of students. As a result, even though teachers spent several thousand hours in professional development during the first two years of the standards' implementation, they overwhelmingly requested more time to understand and plan with the standards and assessments and to adjust instruction to meet the needs of underserved student populations. They also wanted to have curricular materials, assessments, and resources that were aligned to the standards and wanted time to plan with colleagues on the use of these resources. Teachers recognized areas where they needed to improve their preparation and pointed to professional development as a means for strengthening their preparedness.

While teachers' responses across the three levels of preparedness varied, almost everyone reported taking steps to increase his or her knowledge and self-efficacy relating to the standards and making corresponding changes to his or her instructional practices. None of their responses contained negative statements regarding the standards or their efforts to adjust; if anything, teachers, and perhaps district and state level administrators, simply underestimated how long it would take to fully meet the challenges of the new standards and assessments. An important first

step might be to provide teachers with additional time to continue to increase their knowledge of the standards, to plan instruction around them, and to adjust their instructional practices. Related to this opportunity, teachers need to acquire further knowledge of the assessments and the CCR Anchor Standards because expertise in these areas would help them to differentiate instruction to meet the needs of all students (Applebee, 2013, Valencia & Wixson, 2013).

Given the difficulties of applying knowledge, teachers asked for more opportunities to translate their knowledge to actual classroom practices. At this point, only a minority of teachers, those with greater experience and advanced degrees, implemented substantive changes outside of reading. When addressing this challenge, administrators and curriculum directors might use findings from the prediction analyses to evaluate the effectiveness of any support activity. Across these analyses, teachers, who evaluated highly the quality of professional development, reported higher levels of preparedness. Thus, individuals, who direct the professional development, might survey or interview teachers to evaluate perceptions of the value of any activity and make any necessary modifications.

The CCSS represent perhaps the most challenging reform in the history of the standards movement, in that, educators and politicians are attempting to promote a globally competitive school system based on the joint outcomes of equity and excellence (Darling-Hammond, 2010; Sleeter, 2007; Sleeter & Stillman, 2007). Future research could assist this endeavor by studying further what teachers need to fully implement the standards to meet this new expectation. In these two districts, adoption of the standards and attempts to facilitate their implementation happened quickly and, at this point, neither teachers, nor administrators appear to be prepared adequately to meet this new challenge. Studies might explore how teachers' implementation of the standards interacts with accountability pressures to demonstrate high-test scores (Au, 2007). Further studies also might look at the complex nature of preparedness and how levels of understanding evolve over time with efficacy and actual instructional changes. Regardless, with any effort to further understand this reform, we believe teachers should be a central focus. Throughout this study, teachers provided positive detailed recommendations as to what they needed as they dealt with the daily challenges of gaining an adequate understanding of expectations and implementing the necessary instructional changes. While the expectations of the ELA CCSS were yet to be fully realized, teachers believed they were moving in the right direction.

There are several limitations to this study. First, all data were collected through survey methods, which limits the depth of understanding teachers' perceptions of their preparedness one can glean from the data. There is no observational data to triangulate what teachers report as their changes in practice (Lincoln & Guba, 1985). Second, the results are only from two school districts and are not generalizable to all elementary teachers' perceptions of their preparedness for implementation. Third, this survey only looked at elementary teachers' perceptions of their preparedness, not middle and high school teachers and it only looked at the ELA CCSS, not mathematics.

Conclusion

All teachers reported participating in professional development related to the ELA CCSS, with most teachers' professional development occurring at the local level, either provided by their school or district. These opportunities were largely in the format of formal, structured meeting or collaborative planning with colleagues and were most often led by staff members from the teachers' school, another school within the district, or from the central office. The most commonly addressed topics dealt with the standards primarily from a general perspective, and

rarely addressed issues such as assessments, newly emphasized skills and topics (e.g., close/critical reading, text complexity), and teaching to different groups of students (e.g., students with disabilities, English language learners). Many participants also reported seeking additional informational on the standards from outside sources. In general, participants had positive perceptions of the quality of their professional development, with average quality ratings lower for professional development offered by the school, district, or state compared to that of professional development offered by a professional organization or college or university. Since teachers' rating of the quality of their professional development experiences was found to be the only consistent predictor across the three dimensions of preparedness, this appears to be a critical component for developing teachers' preparedness.

Despite the widespread participation in professional development, based on the results of this study, it appears that teachers do not believe that they are fully prepared to implement the ELA CCSS, yet they are making progress towards this goal. Teachers reported greater levels of knowledge and self-efficacy for implementation than changes in practices. However, teachers did report making changes in practice, mainly with their reading instruction, and acknowledged the need for continued change. Teachers simply asked for the necessary time, resources, and additional professional development to fully meet the demands of the more rigorous learning standards.

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Self-Reported Learning from Co-Teaching Primary Science Lessons to Peers at University

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Abstract

Universities are challenged continuously in reviews to improve teacher education, which includes providing substantial theory-practice connections for undergraduates. This study investigated second-year preservice teachers' (*n*=48) self-reported learning as a result of co-teaching primary science to their peers within the university setting. From extended written responses and observations of teaching practice, data indicated learning around the following themes: lesson implementation, content knowledge, teaching strategies, confidence to teach, questioning skills, grade appropriateness of content, time management, and how to critically observe co-teaching. The co-teaching episodes within the university setting were emphasised as a way to build confidence and as development of plausible science lessons for implementation in authentic primary classrooms. Co-teaching primary science to peers scaffolds the development of teaching skills and practices through dual roles as both teachers and student recipients.

Keywords: Praxis, preservice teachers, theory and practice, co-teaching

Introduction

Education reform is ongoing. For years, in the United States (American Association for the Advancement of Science, 1990), United Kingdom (Lunn & Solomon, 2000), and Australia (Goodrum, Hackling, & Rennie, 2001) reform has highlighted the need to improve science education, and this continues in Australia (Masters, 2009). One focus of reform is on preservice teacher development with recommendations to increase the connection between theory and practice (i.e., praxis). Numerous educators (e.g.,Cochran-Smith&Zeichner, 2007; Korthagen, 2001) have provided strong arguments and evidence on how to enhance praxis, that is, by challenging preservice teachers todevelop content knowledge and pedagogical knowledge through practical applications. Yet,praxis generally involves preservice teachers entering schools. This study focuses on preservice teachers' self-reported learning as a result of teaching primary sciencein the university setting.

Literature review

Teaching is complicated and complex. However, there appears to beparticular pedagogical knowledge practices that can lead towards effective teaching (Hudson, 2004), which will be discussed in the following literature review. Effective teaching involves devising plans that are linked to relevant curriculum documents and provide a structure for delivering lessons (Rush, Blair, Chapman, Codner, & Pearce, 2008). To be purposeful in learning, these plans must target specific curriculum standards (Davis, Petish, & Smithey, 2006). To plan effectively the teacher needs to have knowledge of the content matter, students, and

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curriculum standards. Such planning requires long and short-term goals where "the teacher must understand and be able to effectively use multiple methods of formal and informal assessment" (Davis et al., 2006, p. 622). Part of the plan is timetabling lessons to ensure the plans are appropriately scheduled (Williams, 1993). There is evidence to suggest that the time of day for certain lessons can affect school performance (Randler&Frech, 2009), which may change from subject to subject and year level to year level.Another contributing factor to learning is the amount of instructional time allocated for subjects, for which there needs to be more research around optimal instructional durations (e.g., Corey, Phelps, Ball, Demonte, &Harrison, 2012).

Preparation for teaching includes plans and extends to setting up teaching and learning resources (Rosaen& Lindquist, 1992; Youens& McCarthy, 2007). Importantly, the teacher needs to prepare for, and demonstrate,appropriate content knowledge for teaching (e.g., Burn, 2007; Cleaves &Toplis, 2008; Youens& McCarthy, 2007). This subject knowledge must relate to students' needs and their levels of development (Harris & Sass, 2009). A teacher's command of content knowledge appears to have a positive effect on student learning in addition to teachers reporting that "inquiry instructionalstrategies contributed to improvement in their students' achievement" (Buczynski& Hansen, 2010, p. 604). Nevertheless, it should be noted that content knowledge alone isby no means the only factor indicative of good teaching (Pantić&Wobbels, 2010). Explicit teaching "is achieved by knowledgeable,committed teachers who tailor and adapt their practices to theongoing needs of all of the students in their classes" (Parr &Limbrick, 2010, p. 584).

Other pedagogical knowledge practices such as selecting and applying appropriate teaching strategies can play a key role for implementing successful lessons (Jeanpierre, 2007; Lappan& Briars, 1995). For instance, in one study (Bradfield & Hudson, 2012), preservice teachers note teaching strategies used for differentiating learning include: (1) understanding contexts for learning, (2) designating facilitators for students' learning, including teacher, peers, parents, and support staff such as teachers aides, (3) managing student groups, and (4) utilising a range of teaching aids (visual, auditory, games) and resources.

Problems and issues can arise during lessons that require problem solving (Ackley & Gall, 1992), which Schön (1987) identifies as reflection in practice. These problems and issues can range from inadequate preparation, including lack of resources, to managing student behaviour.Indeed, a main consideration for teaching is classroom management, and in particular behaviour management (Feiman-Nemser& Parker, 1992; McKinney, Campbell-Whately, & Kea, 2005), where a teacher's skills can be challenged (Maag, 2008; O'Brien & Goddard, 2006).So it is not surprising that preservice teachers would grapple with behaviour management in their early stages of development (Putman, 2009). Woodcock's (2010) study shows that preserviceteachers use "lowlevelorinitialcorrectivestrategieswhen addressingbehaviouralissues" and further indicate that the use of "bothpreventionandlow-levelcorrective strategiestobeequallysuccessful when dealingwithstudentbehaviour" (p. 1266). As might be expected, the study also shows that preservice teachers use strategies where they feel most confident in employing such strategies. There is little doubt that "preservice teachers need to master skills of managing classroom to prevent frustration when they confront with the realities of classroom life", which requires "the development of a strong sense of efficacy and competent management strategies" (Gencer&Cakiroglu, 2007, p. 672).

Implementation of the lesson structure with cognisance of timeframes can assist the flow of an activity (Briscoe & Peters, 1997; Jeanpierre, 2007). Implementation demonstrates not only an introduction, body and conclusion to the lesson but that "lessons had an arrived at learning aim that was clearlyarticulated, shared with the students and demonstrably understoodby the students" (Parr &Limbrick, 2010, p. 589). Effective implementation of a lesson necessitates explicitteaching and a process of scaffolding and monitoring students' learning. During the implementation stage, teachers ask students questions pitched at the student's zone of proximal development (e.g., Jeanpierre, 2007). Such questioning can also assist with diagnostic, formative and summative assessments.

Assessment must be planned and embedded in the lesson activities to determine students' learning as a result of the lesson (Corcoran & Andrew, 1988; Tillema, 2009). Assessments can involve the teacher, student as a learner, and peers (Ozogul, Olina, & Sullivan, 2008). Research (Kohler, Henning, &Usma-Wilches, 2008) shows that preservice teachers generally use observations of students' performances as formativeassessment strategies yet other methods "such as examining writing or products, administering tests or quizzes, or having students engage in selfassessment" are rarely accomplished (p. 2114). Finally, there can be viewpoints about effective teaching that may help to guide pedagogical practices (e.g., Jonson, 2002; McKinney et al., 2005; Tillema, 2009). These viewpoints are generally representedthrough the teacher's philosophy of teaching, which materialises from beliefs about what constitutes effective teaching and learning. This current study aimed to explore preservice teachers' self-reported learning for co-teaching a primary science lesson to their peers.

The rationale for teaching primary science to peers is formed around two assumptions, articulated by Santagata, Zannoni, and Stigler (2007) as: "(1) exposure to examples of teaching creates learning opportunities for prospective teachers; and (2) through field experiences preservice teachers meld theory into practice" (p. 124). The field experience in this study involves co-teaching to peers, which also aligns with Bandura's (1986) vicarious experiences as recipients of peers' co-teaching and development of mastery experiences as co-presenters of primary science lessons. Presenting primary science lessons to peers was intended to demonstrate different teaching practices, which provided contexts for analysing what works and what does not work. The research question was: Whatdo preservice teachers' report about their learningwhen co-teaching primary science lessons to peers in the university setting?

Context

There were 188 second-year preservice teachers involved in a nine-week primary science university unit at one Australian university.The unit encompassed a one hour lecture, one hour tutorial and two hour workshop.Tutorials were formed around devising a primary science unit of work and the workshops provided hands-on experiences with the addition of the preservice teachers presenting science lessons to their peers.Various online resources were available to the preservice teachers including ideas for primary lessons, lesson plan formats, and links to state and national websites outlining key curriculum documents (e.g., http://www.australiancurriculum.edu.au/Science/Curriculum/F-10). During the nine weeks, lectures and tutorials covered the following topics: (1) science in society and working with primary students; (2) rationalising a science unit with theories and approaches; (3) devising a science curriculum; (4) planning science lessons and the importance of content knowledge and pedagogical knowledge (Hudson, 2004); (5) managing the learning environment; (6) resources

for teaching primary science; (7) assessment and evaluation in science education (Hudson, 2007a); (8) curriculum integration (Hudson, 2012); and (9) High Impact Teaching Strategies (HITS; see Hudson, 2007b).

The workshops required pairs of preservice teachers to co-teach a 45-minute primary science lesson by adhering to the following criteria:

- Model a sound and timely lesson structure including a stimulating introduction, engaging student-centred activities, and purposeful conclusion linked to the key scientific concepts.
- Demonstrate constructivist principles with prior knowledge, use of questioning, hands-on/minds-on activities while facilitating active and inclusive student participation.
- Present effective teaching strategies including preparation, planning, and appropriate classroom management.
- Show a clear understanding of the content knowledge associated with your teaching topic (introduction, astute questioning, and key concept development).
- Employ teaching and learning technologies effectively to cater for the range of student abilities within the timeframe (e.g., early finishers, inclusivity).
- Demonstrate professionalism and collaborative team teaching with an understanding of the affective domain for teaching and learning (e.g., enthusiasm, confidence, and attitude).
- Linklesson material to syllabus documents with a variety of resources, including relevant websites.
- Provide a thoughtful and thorough health and safety form.

Apart from drawing on the pedagogical knowledge indicated in the literature review, Figure 1 provided a model for planning their science lessons and further highlighted the relationship between assessment, evaluation and other lesson components. For instance, the outcome or standard will be derived from the current presiding curriculum, in this case the Australian Curriculum: Science (ACARA, 2012). The selection of a key scientific concept was designed to provide the students stronger focus on the content knowledge appropriate for the "primary students". The hands-on activitiesneeded to be connected to health and safety requirements, lesson duration, resources, and the teaching strategies to facilitate student learning. The activities also included pedagogical knowledge of teaching practices such as classroom management, questioning, and lesson implementation design (e.g., see Hudson, 2012). Figure 1 shows what can be assessed and evaluated, and guided their written critical self reflection, which was to be submitted individually for assessment a week after the peer presentation. At the conclusion of the peer presentation, the presenters elicited feedback from their peers using a self-designed one-page survey with written responses.This allowed the preservice teachers to specifically target their areas of need and facilitated ownership of their learning. The tutor also provided brief and confidential verbal feedback, where most presenters took notes so they could combine with peer feedback towards writing their critical self reflection on their lesson presentation.
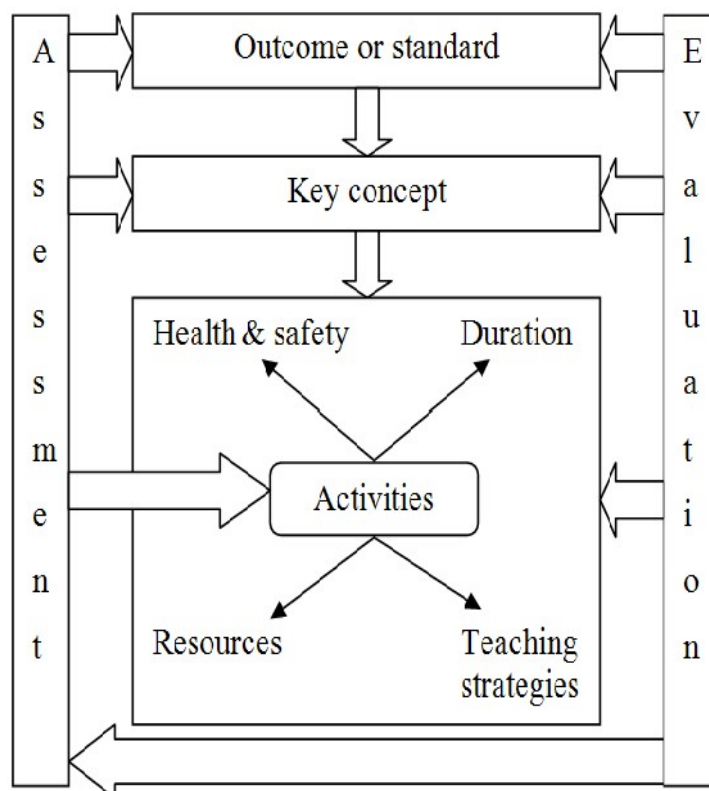
Figure 1: Model for planning, assessing and evaluating a science lesson

Data collection methods and analysis

From a pool of 188 second-year preservice teachers involved in a primary science unit, this study randomly selected two workshop classes of preservice teachers to complete a brief five-part Likert survey and extended written responses. Incomplete survey responses were deleted; hence there were 48 second-year preservice teachers (19% male, 81% female), who were of varying ages, that is: 54% < 21 years of age, 8% between 22-29 years of age, 38%>30 years of age. Their secondary high school science studies were also varied with 42% completing biology, 2% physics, 21% multi-strand and 35% who had no science high school completion. When asked if they thought they would teaching primary science when entering the Bachelor of Education (BEd) degree 92% had understood this to be a requirement while 8% had not considered teaching primary science as part of the general BEddegree. The survey contained six statements with a five-part Likert scale, based on teaching primary science, and extended written responses that focused on their self-reported learning achievements as a result of the peer teaching lessons. Quantitative data were entered into SPSS to generate descriptive statistics (percentages, mean scores, and standard deviations) for analysis. The extended written responses were collated into themes as they emerged (Creswell, 2012). The first researcher (Hudson) observed all co-teaching primary science lessons (*n*=24) over the semester period and used a laptop to take notes on the preservice teachers' presentations. The survey responses, written responses and observations with notes were used to triangulate data (Creswell, 2012).

Results and Discussion

Percentages from the Likert scale showed that one student only disagreed that her peer lesson presentation helped her with knowledge for teaching science. There were up to a quarter of

the students who claimed they were unsure whether the peer lesson presentation helped them to demonstrate the knowledge for teaching science (though no one had a strongly disagree response on any item). Nevertheless, the majority were in agreement (agree and strongly agree) that the peer lesson presentations assisted them to learn about teaching science.Standard deviations (*SD*) were low, indicating minimal variation in responses, and mean scores were in the upper end (range 3.93-4.65, Table 1). In percentage terms, out of 48 surveyed participants, 98% agreed or strongly agreed that the lesson presentation made them recognise the importance of teaching primary science with 94% indicating they learn to teach science by presenting to peers and 91% claimed they had developed a positive attitude for teaching primary science as a result of the experience (Table 1).

Table 1: *Mean, standard deviation and percentages on teaching science*

	Mean	SD	D	U	A	SA
Teaching primary science is important	4.35	0.55	0	2	31	67
Learn to teach science	4.65	0.60	0	6	52	42
Enthusiastic for teaching science	4.22	0.63	0	11	56	33
Knowledge for teaching science	3.97	0.62	2	25	65	8
Positive attitude for teaching science	4.25	0.60	0	9	58	33
Cater for students needs science	3.93	0.63	0	23	60	17

These preservice teachers considered their achievements as a result of teaching a primary science lesson to their peers with some writing more than one achievement.Their comments about learning achievementswere collated into these broad themes: lesson planning, preparation, and implementation (*n*=14), content knowledge (11), teaching strategies (6), confidence to teach (5), questioning skills (4), grade appropriateness (4), time management (3), critical observation of peers (3), reflection in practice (2), professionalism (2), connecting science to other subjects (2), receiving peer feedback (2), and development of vocal skills (2). There were various single comments that could not be collated into themes and were omitted from this analysis. The following presents and analyses data around these themes.

Planning, preparation, implementation and confidence
The peer teaching episodes provided opportunities for learning about planning and for learning about authentic preparation: "I really liked being prepared and practising the lesson and what I was going to say" (Participant 5). Indeed, these preservice teachers could self allocate negotiated times to prepare and practice their presentation in a vacant classroom up to a week before their actual lesson presentation. Observations indicated that the uptake of this voluntary allocation was significant. Further observations of preservice teachers rehearsing their co-teaching presentation also showed that preservice teachers built confidence for presenting in a co-teaching situation, particularly with the learning around available audio-visual equipment and information communication technologies (ICT). The connection between planning, preparation and confidence to teach was made very clear as a result of co-teaching to peers:

> We were very well prepared, as we had started planning early and talked to people about the plan we made adjustments, and arranged and tested all equipment I felt confident and calm doing the lesson, because of planning, testing and practice. I understood the content and the expected outcome" (Participant 4).

Bandura (1986) claims self efficacy (belief in one's ability to accomplish a task) is related to confidence and can affect motivation and learning experiences. He also highlights vicarious and mastery experiences as approaches for developing self efficacy. In this study, the vicarious experiences appeared through pseudo primary student involvement and mastery

experiences were being developed through first-hand involvement of co-teaching to peers.According to participants, this learning as pseudo primary students allowed them "to see other [co-teaching] ideas and generate my own from experiencing peers' lessons" (Participant 40).

All preservice teachers acknowledged their learning of primary science teaching as a result of co-teaching and participating in the science lessons. Many noted the experiences demonstrated the importance of students constructing knowledge, "To realise how important it is for students to construct their own knowledge by themselves through participating in activities and finding the lesson interesting.The importance of creating rich learning experiences" (Participant 1). The supportive environment with peers tended to allay concerns about teaching to some degree. Participant 6 claimed that the co-teaching to peers was "team building between the whole class (including teachers) because we are all stressed about it, we are all in the same situation" (parenthesis in original). The preservice teachers considered that participating in the co-teaching as both teachers and learners provided insights about planning, preparation and implementation, and the complexities of teaching: "learn new strategies of how to manage a classroom, how difficult teaching is and how complex it is" (Participant 4). The theory-practice connection also became apparent: "Seeing so many educational theories (that we have read and agonised over) put into practice was such a learning experience (Participant 17).

Planning and implementing lessons provided connections between planning a sound lesson structure and consistency of approaches, as some participants acknowledged: "the detail required to plan an effective and enjoyable lesson" (Participant 39) and "the way you structure and teach the lesson is just as important" (Participant 40) but also "how important it is to stick to an approach to make it effective" (Participant 38). As second-year preservice teachers, there was a realisation that planning and preparation were linchpins for teaching, which required knowledge of teaching approaches and strategies and trialling such approaches necessitates perseverance, especially as a new approach may require multiple trials before mastery. Yet, the complexities of teaching appeared more evident to the participants as they progressed through the co-teaching presentations.

The peer teaching episodes were established as a practical measure to increase their pedagogical knowledge, content knowledge and confidence for teaching primary science, which was demonstrated from researcher observations and within participant comments: "being confident about explaining scientific concepts" (Participant 18) and "I managed to speak confidently to this class, which I have struggled with before" (Participant 29). Peer supportiveness and presentations were claimed to instil more confidence in the preservice teachers: "My peers were super supportive and enjoyed my lesson" (Participant 24) that helped them to gain confidence for teaching primary science: "Successfully completing my science lesson to a reasonable standard and obtaining a better understanding about strategies to teach primary science. It was helpful listening to and being involved in lessons created by my peers" (Participant 41).Presenting to peers was recognised as a learning opportunity for understanding how to plan and implement primary science lessons, for instance, "being able to learn from peers and have a deeper understanding of primary science units" (Participant 46), and

> This subject really gave us a little more insight into teaching a particular lesson. Even though it was to our peers it gave us the opportunity of presenting in front of an audience while teaching. Learnt how to really provide higher order thinking amongst the class. Learnt ways to address open discussions amongst peers and students. (Participant 47)

Science content knowledge

Science content knowledge appeared as a significant theme, with 11 preservice teachers in this study claiming the peer teaching episodes assisted in their learning of content knowledge in two ways: planning and teaching, and participation in peers' lessons. Comments such as "I learnt so much about biology by planning this lesson and I enjoyed teaching it" (Participant 3) and "learning actual science content in an engaging way that I will remember for my future students" (Participant 15) demonstrated the self-reported impact peer teaching had on their learning of science content knowledge. Participation as a class member in the peer teaching assisted in bridging the content knowledge gap, for example,"I wasn't familiar with any of the science content yet throughout [the peer teaching]I've learnt a lot and started enjoying science" (Participant 10). Important to their learning was the recognition that content had to be "relevant" and preservice teachers needed to have an "understanding what a key science concept is" (Participant 8).

Within their responses, there was concern that they had to know all the answers in science, for instance: "Not being able to have answers for questions" (Participant 4) and "not being able to answer a question asked by a student or not being able to get around it without looking silly" (Participant 9). This suggested they had learnt about the importance of teacher preparedness and that the teacher must obtain "correct facts – so students do not learn incorrect information" (Participant 30) and "make sure that I have the correct information to give to students as I don't want to misinform them" (Participant 20). Notably, they had learnt that science knowledge changes continuously, "The ever changing nature of science. I am concerned about teaching a lesson that has been superseded and updated" (Participant 17); thus there was learning about the currency of content knowledge for the classroom, "making sure I teach the most recent information" (Participant 19). Although they had learnt about the need to have "correct knowledge and understanding to successfully teach and apply to primary science" (Participant 29), there was also recognition that the teacher must be an up-to-date researcher of content knowledge to assist students more effectively, for example: "I'm worried I don't know enough about the subject matter to be able to teach it confidently, but I know I will be able to find lots of information from library and internet resources" (Participant 15), particularly "because science is factual yet changing" (Participant 21). However, the fear of not knowing the answers to questions can be as a result of primary students' questions going beyond the initial content preparation for the teacher, which requires further research as suggested in Participant 1's response: "You don't have to have all the answers to teach science.Science can be fun and interesting, you just have to explore it and find a way for yourself and your students to make a connection to the content/process". There was further learning that teachers "need to invest time, you can't just 'do' science for half an hour" (Participant 2). Observation of preservice teachers preparing themselves by practising their co-teaching lessons indicated that investing in learning about science content prior to teaching tended to establish a foundation for confidence building.

Even though there was concern about how much content knowledge was required for teaching science, the majority of participants explained in various words that content knowledge was achievable and essential for teaching, for example, "You have to really know your stuff, and that science is not scary at all" (Participant 16). There were points made about meaningful science in contrast to the transmission of facts, as noted in these two responses: "Scientific concepts can be presented in many practical hands-on ways.Science is about discovery and understanding not just the absorption of facts" (Participant 7) and that science teaching "doesn't appear as a whole bunch of facts – it needs to have real life meanings and applications" (Participant 16). Abruscato (2004) follows in the footsteps of Dewey's

discovery learning and emphasises that students learn more effectively and timely through a process of guided discovery. These co-teaching participants were also guided in their discovery of primary science teaching through hands-on experiences and seemed to understand the necessity to be prepared for teaching the content before entering the classroom and "the science content and information can be gained through different methods, not only from textbooks (Participant 3). Similarly,

> If you don't do very intense background research the lesson doesn't work, as students don't know what they are meant to learn/do. Therefore you'd have to go back over the topic and try to change students' conceptions that they developed in the "bad lesson" – this just confuses students. (Participant 5)

These responses suggested that it may not necessarily require preservice teachers to collect and retain copious amounts of content knowledge but rather be content prepared for the next science lesson, especially as content knowledge changes with new scientific discoveries and primary teachers generally do not teach the same science lesson within the same school year.

Participation as pseudo-school students helped these preservice teachers to develop their science content knowledge: "Through seeing lots of science lessons I have broadened my knowledge of the types of things I can teach in science" (Participant 8) and to "broaden my views on 'what is science'" (Participant 14).Selecting content for specific differentiation of learning (i.e., addressing students' learning needs) was not mentioned by these second-year preservice teachers, which may well indicate their stage of development. However, some mentioned the need for connecting science content tograde and age appropriateness, for example: "The content and relevance of the topic in relation to the year level, and the fact that it was engaging and interesting to the class" (Participant 48) and "getting a greater understanding of what achievement levels are expected for different year levels – learning what is age appropriate" (Participant 25). Despite the peer presentations not being a "real" primary classroom with students of those age groups, the peer teaching was noted as way to "create a successful and plausible science lesson that could be used in a real classroom" (Participant 15).It was demonstrated through their comments and observations of teaching practices that learning to teach primary science in the university setting needed to be plausible and, indeed, applicable to the primary science classroom.

Developing questioning strategies
Several participants mentioned keeping science simple and fun to engage students with other important actions: "Questioning is important" (Participant 26) and "creating a simple hypothesis, and re-capping, is important" (Participant 31). From observations, participants articulated diagnostic questioning (i.e., questions used to elicit students' prior knowledge) and askedhigher-order thinking questioning to activate students' construction of science knowledge, which was further recorded in their written responses, for instance: "The use of questioning was a powerful tool to elicit prior knowledge. The use of questioning allowed students to construct their knowledge in the social setting" (Participant 6). Hypothesising and devising questions for investigation was noted as a successful science learning strategy: "Students investigating own questions keeps them engaged and really thinking" (Participant 5). Apart from learning about "how to do up a lesson plan, different strands in science, and lots of activities to implement into the classroom" (Participant 25), many preservice teachers such as Participant 32 emphasised that "everything needs to have a purpose – activities should not be time fillers, they should have an underlying concept.There is extensive reasoning/concepts/planning behind every single lesson". Purposeful learning was a main theme that threaded most comments with strong connections to drawing upon the national "syllabus and the source book guidelines" (Participant 37).Learning about the complexities of

teaching emerged through involvement as pseudo students and co-teachers. Participants commented on refined questioning techniques guided by key science concepts linked to the national curriculum (e.g., ACARA, 2012).

Curricula integration and science learning
This particular university coursework provided the first practical application of curricula integration in their second year of university study, where the preservice teachers were encouraged to utilise other key learning areas (KLAs) to help facilitate the learning of science concepts, as shown in Participant 17's comment: "understanding that a science lesson has science knowledge/content, but can be presented in conjunction with another KLA – eg: drama". The usefulness of curricula integration for learning science was recognised by others, to illustrate: "I have learnt how to integrate other subjects in science and this will be very useful when I'm a teacher" (Participant 48), "that science can be used with any other subjects, you can combine" (Participant 6), and "that primary science is so easily and effectively integrated into other KLAs" (Participant 36). From observing the 24 co-teaching lesson presentations, more than half demonstrated strong links with other KLAs to capitalise on the learning of science concepts.

Integrating the arts features in the participants' practices and responses, for instance, curricula integration of drama in the form of role playing was considered as a valuable teaching strategy "because you are totally involved and take part 'as an ant'. Different activities allow people to show their different potentials e.g. being good at drama" and "role play to understand the learning as well as building a set of lungs". Observation of co-teaching also highlighted art, craft, music and multi-media as ways to communicate science content knowledge. Although some participants focused on content knowledge as the reason for the lesson being memorable, integrating subjects was emphasised as a memorable method for learning: "Talking about features and adaptations of animals in different environments then creating our own", and "role playing – oxygen coming in, CO_2 coming out. People played O_2 or CO_2 molecules". Indeed, the arts were noted as an engaging way to get across the science ideas, such as "having different activities for each group and incorporating other subjects - integration and dressing up as ants". Hudson's (2012) model of curricula integration demonstrates that other subjects can be used as tools for investigating science concepts, which relies on a teacher's pedagogical knowledge and creativity insights. Observation of co-teaching showed that many participants employed creative strategies that drew upon other curriculum areas for the sole purpose of enhancing science understandings.

Learning from peers' co-teaching
Without selecting or referring to their own presentations, these preservice teachers were asked about primary science lessons that stood out during their peers' presentations. This made them focus on their most memorable science lessons, which were spread across particular topics such as: miniworlds (*n*=12), erosion (8), respiratory system (8), chemical reactions (8), animals (6), human skeleton (3), solids and liquids (3) and single responses (e.g., testing for acidity, paper making). Although the first five topics showed six or more in agreement with these being memorable, the spread indicated that some topics were enjoyed more so by different participants, which may be indicative of their varied needs and interests. They were asked reasons for their choices and the key features of the memorable lesson they selected individually. Most participants commented on the presenters' enthusiasm (teacher's affective domain), the practical hands-on nature of the activity (kinaesthetic learning), and the overall structure of the lesson (planning and implementation).

These preservice teachers were asked to identify key features of thismemorable co-teaching lesson that they experienced as substitute primary students. There were key features that stood out for these participants as recipients of their peers' teaching. Many comments focused on the classroom management, hands-on lesson activities, and the technology, as represented by Participant 13, "praise and reward, PowerPoint slides and group activities" and Participant 17, "engaging, informative, fun, constructivist, hands-on".The practicalities of the science activities were recognised by peers, for example, "designing a waterway to prevent erosion and using the information given to construct it/build it" (Participant 34). Hands-on experiences were emphasised as a key feature to maintain interest and stimulate scientific thinking, "The discussion and activities encouraged critical thought and assisted in engaging my interest (Participant 39). In addition, activities that centred on science education for sustainable living (SESL, see Hudson, 2007c) was highlighted as key featuresof peer lesson presentations: "connection to sustainable living" (Participant 28) and "sustainable resources – environmentally friendly alternatives, paper recycling" (Participant 30).

The second-year preservice teachers identified effective strategies observed during their peers' lesson presentation, which can be classified generally at the macro and micro levels of teaching.At the macro level, and as a result of their engagement in lecture and tutorial materials, participants identifiedbroad teaching approaches employed during the lesson presentations, to illustrate: "role play teaching style, constructivism approach", "guided discovery, transmission, process skills", "shared instruction between teachers – both explained concepts, constructivism, guided discovery", and "POE [Predict, Observe, Explain] and Bloom's Taxonomy" were recognised as teaching approaches. At the macro level there was recognition of lessons that "catered for a wide variety of learning styles". Participants identified effective strategies at the micro level, particularly classroom management techniques: "good classroom management, loud clear voice", "classroom management was excellent, group work was present", and "clear classroom management strategies".Furthermore, at the micro level, the use of questioning skills that assisted in "higher order thinking" and hands-on activities that were "student centred, hands-on learning, predicting, allowing students to try different things to make a different reaction". Indeed, most comments focused on pedagogical knowledge that promoted student engagement, including the use of resources such as "technologies to engage students" and having a "variety of fun and engaging activities, videos etc". The preservice teachers were encouraged within the coursework assessment criteria to select varied teaching strategies; consequently some drew upon other BEdcoursework ideas such as drama to engage students:

> Class role play about how we breathe and some people were the nose and so on then we all as a class were the oxygen walking the cycle.We also did an experiment where we made a set of lungs from balloons.(Participant 27)

Overall, teaching science was acknowledged as a creative process with "many ways to teach science, not just one way.Each topic can be taught in a very creative and interesting way.This varies for different people though" (Participant 4). These participants outlined that they had learnt from observing and participating in their peers' co-teaching of primary science lessons. They evaluated the effectiveness of their lessons by drawing on their own experiences, tutor's feedback, and written feedback from peers. This evaluation was another level for co-presenters to reflect on practices towards refining their own teaching about what works and what does not work. The creative delivery of lessons were observed and experienced by peers to instil a sense of how particular lessons can have an impact on the learner. Indeed, Davis and Smithey (2009) claim that, "Beginning elementary teachers thus require many areas of mastery, yet generally lack both sufficient coursework and experience that would contribute to their knowledge base for helping children" (p. 2).The peer presentations in this study acted

as pseudo primary teaching experiences where co-teachers analysed and collaboratedoneffective pedagogical knowledge practices and determined appropriate content knowledge to be taught.

Conclusion

This study aimed to investigate preservice teachers' self-reported learning as a result of co-teaching experiences to peers. The co-teaching to peers provided a way to develop teaching practices in a safe and supportive university environment, particularly as they were in their second year of a four-year degree and this was their first opportunity to have practical teaching experiences. Teaching is complex and, with the range of primary student abilities and behaviours, this study showed that co-teaching in the university setting scaffolded the development of fundamental teaching practices. These second-year preservice teachers self-reported learning on how to teach included planning and implementation with further learning about the essential nature of preparing for science content knowledge, selection of appropriate teaching strategies and employing insightful questioning techniques, including the use of open and closed questions, and lower- and higher-order thinking questions.

Learningteaching skills and practices before entering authentic primary classrooms can allow preservice teachers to focus on the fundamentals of teaching before the somewhat unpredictable elements (e.g., student behaviour) of a real primary classroom. The co-teaching was emphasised as confidence building and that theseplausible science lessons"could be used in a real classroom". According to participants' self-reported learning, this co-teaching arrangement provided opportunities to develop content knowledge and pedagogical knowledge, which extended to viewpoints about how to construct an effective primary science lesson. Such viewpoints included curricula integration, especially through the arts (drama, art, media) that may assist students for developing science conceptual understandings. However, criteria in university assessments need to outline explicitly desirable teaching practices for university students to follow.

Universities seek ways to connect theory with practice (praxis) for preservice teachers, and teaching such connections generally requires preservice teachers entering primary classrooms. Indeed, preservice teachers need to develop confidence and skills before entering real school, thus opportunities to teach to their peers within the university setting can facilitate fundamental skills for teaching at very early stages of development. The learning reportedly occurred through co-teaching and as recipients of the co-teaching arrangements, and the impact on this learning for teaching primary science was clearly evident in their responses. Co-teaching primary science to peers scaffolds the development of teaching skills and practices through dual roles as teachers and student recipients of co-teaching practices. In addition, constructive feedback to co-teachers allowed for cognitive analysis of effective teaching, and reflection in and on practices further scaffolded their development. Evaluatinguniversity coursework in teacher education to include opportunities for scaffolding preservice teachers' skill development,beginning with co-teaching arrangements during early stages to solo teaching arrangements as they progress through their coursework, may produce a more prepared cohort of future teachers, not just in science buy across all primary education subjects. More research is needed to explore co-teaching in other subject areas and to further identify the complexities of teaching that could be unpacked and embedded, practically, in university coursework.

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The survey of the information literacy among students and teachers

Kazuyuki Sunaga[1]

Abstract

The aim of my study is to research information literacy that university students and school teachers expect to acquire for themselves and to teach their students in Japan. Examining the questionnaire conducted to them, they are willing to acquire skills to identify their task, to read information, and to present the result of task. However, they are unwilling to acquire skills to evaluate the information that they have found, to make a note to be extracted from information resources, and to evaluate the process and performance. It is seemed that they are less interested in the instruction of evaluating information and making a note to their students. In future, as the explosive growth of information are continuing, it will be necessary that people master skills to evaluate information and to make a note. Teachers need to teach to their students not only skills to search and collect information but also skills to evaluate information and to make a note, and methods to evaluate process and performance.

Keywords: Information literacy, information skills, teachers, student, evaluation,

Introduction

Information literacy in Japan

This paper is intended as an investigation of the concepts of information literacy among university students and school teachers in Japan. This purpose of study is a new approach to the solution to the instruction of information literacy.

In the beginning, I would like to explain about the background of this study. The school library law was established in 1953 in Japan. We can find a school library in every school today. The most of schools have a computer room. However, a school library rarely connects with a computer room. In addition, there are a few of computers in a school library. As for the human resources, the staff of school library are two types; teacher librarian and school librarian. They don't always work in school library. Teacher librarians generally dedicate to teaching their subject in class room and sometimes work in school library. Teacher librarian can instruct information literacy. On the other hand, the school librarians are non-teacher staff. School librarians manage their school library but school librarians have few chances to teach information literacy. Because their roles are essentially clerical works. No person teaches information literacy in elementary schools. Technical art teachers in junior high school and information science teachers in senior high school often teach information literacy to their students while they instruct computer technology for one of the subject.

The policy of the Ministry of the Education, Culture, Sports and technology(MEXT) in Japan leads to increasing of school teachers' interest in the information literacy and the

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active learning. Their discussion concurrently focuses on the development of computer technologies and an increase of resources on webs. Unfortunately, they rather disregard the definition of information literacy and fundamental question of information skills remains still unanswered even though they often coped with the cross curriculum introduced in 2003. Because most of Japanese teachers and educators generally rely on textbook with teaching their subject in classroom and reluctantly agreed to do the cross curriculum. However, they face the educational policies relevant to information literacy.

More over two hundred universities and colleges in Japan provide the training courses for teacher librarians. In addition, 45 universities and the Open University of Japan provide summer session for uncertificated teachers. University students and trainees, who will take a certification of teacher librarian, do rarely realize the definition of information literacy as well. The programs in the course are so short that university students and trainees are unfamiliar with the information literacy. There are five subjects and ten credits during 150 hours in teacher librarian course. The training course consists of such subjects; the School management and school library, the Learning with school library, the Reading activities, the Organization of resources in school library and the Utilization of information media. They can learn information literacy in two subjects; the Learning with school library and Utilization of information media.

The definition of information literacy

It is inevitable that the definition of information literacy is considered. Olivier Le Deuff (2011), French researcher, discusses that information literacy(Informacy, Infoliteracy) is associated with computer literacy(IT/information technology / electronic information literacy), critical literacy (critical thinking), library literacy(library / bibliographic instruction), media literacy(new media literacy), network literacy(internet literacy, hyper-literacy), digital literacy(e-literacy), visual literacy and social literacy(participatory, media literacy, Participation literacy). Generally, the information literacy is ambiguous and the meaning is infinite.

Van Dijk and Van Deursen (2014) introduced the following range of skills concerning digital skills. 1. Operational skills, 2. Formal skills, 3. Information skills, 4. Communication skills, 5. Content creation skills, and 6. Strategic skills. They argued that less attention has been paid to so-called information skills, the ability to search, select, and evaluate information in digital media. As the explosive increase of information are progressing, the ability to select and evaluate information is crucial. When students become adults and work in society, it is important to explore, select and evaluate information. We will reflect the results of analysis in information literacy education.

Van Dijk and Van Deursen considered term "literacy" as referring to reading and writing text. In classical interpretation term "literacy" was meant to read sentences written on paper materials. In this paper, information literacy is considered as a range of skills to identify task, to search information, to read information, to evaluate information, to make a note, to present the result and to evaluate the efficiency of process and the effectiveness of performance.

Methods

I added up the questionnaires among university students and school teachers. The questionnaire is consisted of three questions:

Question 1; What they did think of the information literacy before the training course or the practical training? They must choose one item from ten alternatives.

Question 2; Which skills they would like to acquire for themselves? They must choose three items from ten alternatives.

Question 3; Which skills they will teach to their students? They must choose three items from ten alternatives.

Question 1 means exactly what they imagined concerning information literacy before the training course for students or the practical training for teachers. Items in Question 1 are following; A. Computer, B. Internet, C. School library, D. Books, E. Periodicals or Magazine, F. Newspaper, G. News in radio or television and H. Others.

Items as information skills in Question 2 and 3 are based on the PLUS model published by James E. Herring in 1996.

Identifying their task includes brainstorming and concept-mapping to find their topics

Searching information

Reading information includes skimming and scanning

Evaluating information

Making a note extracted from information resources

Presenting the results

Self-evaluation includes the efficiency of process and the effectiveness of performance.

Using the PC and internet

Using library

Other things

A. Identifying their task is relevant to *Purpose*, B. Searching information is relevant to *Location*, C. Reading information, D. Evaluation information, E. Making a note, and F. Presenting the results are relevant to *Use*, and G. Self-evaluation is relevant to *Self-evaluation* in Herring's PLUS model. H. Using the PC and internet is relevant to *Computer literacy* mentioned by Le Deuff or *Operational skills* mentioned by Van Dijk and Van Deursen, and I. *Using library* is relevant to *library literacy* mentioned by Le Duff.

I conducted questionnaires to four groups; two groups of school teachers and two groups of university students. I show the demography of eligible persons. First group, teachers' group A was consisted of teachers in a municipal junior high school. A few teachers

might be school library staff and most of them teach their subject in classroom. Second group, teachers' group B was consisted of teachers in public and private secondary schools and one member of local education board. Junior high school teachers accounted for 12%, senior high school teachers accounted for 63%, secondary school teachers accounted for 22%, and member of local education board accounted for 3%. As well as teachers' group A, most of group B teach their subject in classroom. Third group, students' group C was consisted of students who learned the subject called "learning activities and school library" in a private university in Tokyo. Forth group, students' group D was consisted students who learned the same subject in other private university in Tokyo. These students of two groups expected to become a teacher and they would like to be a teacher librarian. Table 1 shows demography of each group.

Table 1

Demography

		Gender		Age					
		Female	Male	18-19	20-29	30-39	40-49	50-59	60-
Group (n=26)	A	54%	46%	--	19%	12%	27%	38%	4%
Group (n=32)	B	45%	55%	--	--	35%	13%	52%	--
Group (n=36)	C	67%	33%	28%	67%	5%	--	--	--
Group (n=11)	D	73%	27%	--	100%	--	--	--	--

In teachers in Group A and B filled in questionnaires after the practical training and workshop of information literacy. Furthermore, students in Group C and D filled in questionnaires within the last class of the subject called "learning instruction and school library". This subject is for the teacher librarianship.

Analyses

In regard of Question 1, the results indicated that school teachers in Group A and B regarded information literacy as computer as well as internet before the practical training. Most of the students in Group C and D considered information literacy to be something associated with the computer as well as internet rather school library before the training course. After the training course and the practical training, they regarded information literacy as a range of skills associated with libraries, computer and internet.

The following is to analyze the result of Question 2 and 3. The central problem of these questions is to clarify respondents' motivation to acquire information skills for themselves and to teach information skills to their students. Respondents' ability concerning information skills is too complicated to examine in detail. Because there remain many of abilities to examine and the criteria of information abilities is another matter.

Figure 1 and 2 show school teachers' motivation relative to information skills. Red bars imply the skills they would like to acquire for themselves. Blue bars imply the skills they will teach to their students or pupils. It was found from Figure 1 and 2 that teachers in Group A and B expect to acquire for themselves the skills to search information and to present results of their task.
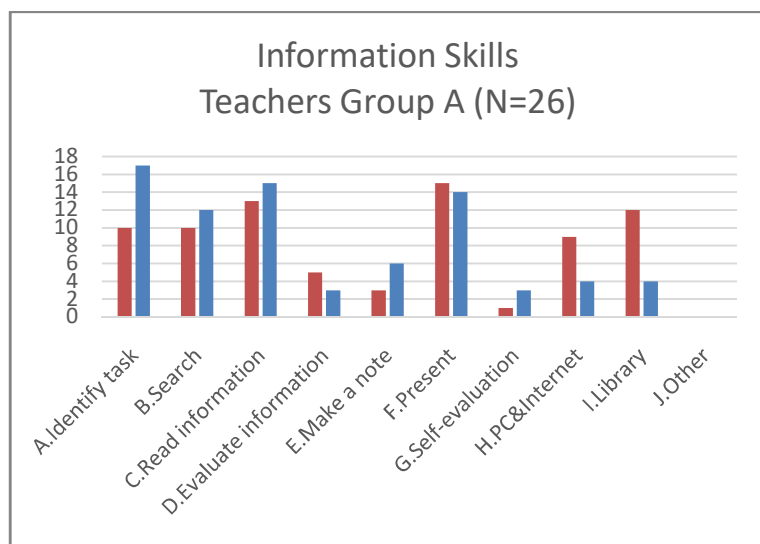

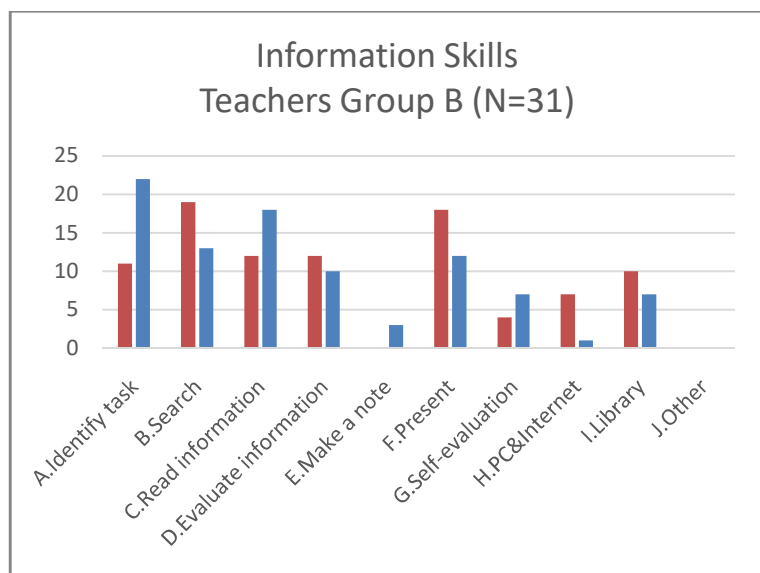*Figure 1.* Information Skills Teachers Group A

Figure 2. Information Skills Teachers Group B

In Figure 3 and 4, as well as the charts of teacher groups, red bars imply the skills they would like to acquire for themselves, but only blue bars imply the skills they would like to teach to their students or pupils if they were a teacher in school. University students in Group C and D expect to acquire the skills to identify their task, to read information and to present results. University students in Group C expect to acquire a skill to search information and university students in Group D are unwilling to acquire a skill to search information in contradiction.
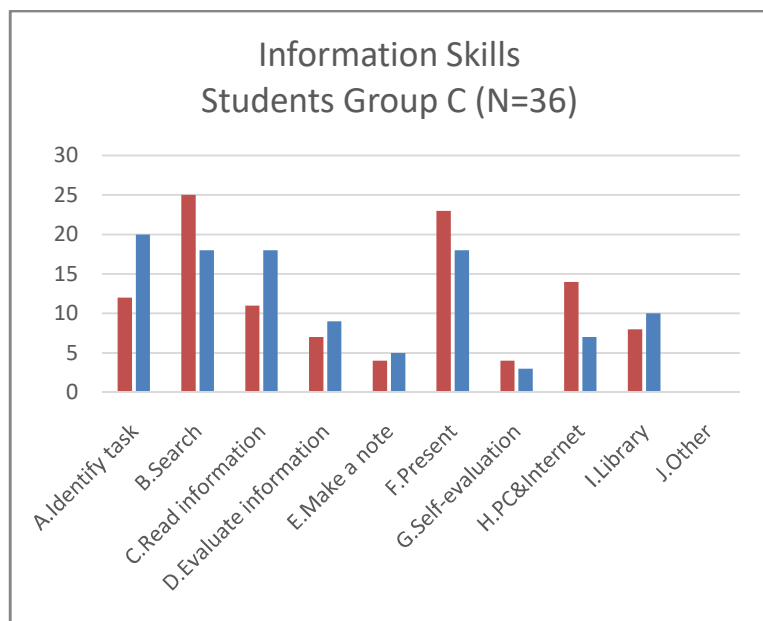

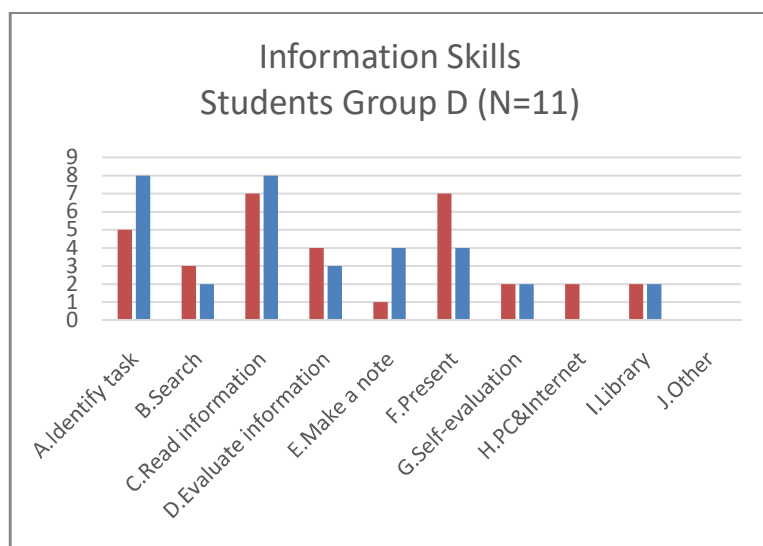*Figure 3*. Information Skills Students Group C

Figure 4. Information Skills Students Group D

Relatively it was seemed that school teachers and university students are less interested in skills to evaluate information, to make a note extracted from information resources, and to evaluate the efficiency of process and the effectiveness of performance.

Conclusion

It is concluded that teachers and university students associate the information literacy with the internet and computer. It was seemed that they acquire the skills to identify task, to read information, to present results. They hope that their students/pupils will learn the skills to identify task, to search information resource, to read information and to present the results. School teachers and university students have a great interest in presentation skill. However, they are less interested in the skill to evaluate information, to make a note and to evaluate their task than other skills. Herring (2010) discussed that it is essential to teach students how to evaluate websites.

As the information on web is explosively increased in the future, we need to evaluate the meaning of information, to gain an insight into information and to struggle against fake news. We anticipate a potential need of the skills to evaluate information and to make a note extracted form information resource.

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Information Literacy and Digital Divide: The Case of the University of Botswana Students Studying Part-Time

Rose T. Kgosiemang[1]

Abstract

In Botswana, the costs and requirements to study full-time are very high. Not everyone can afford to study full-time without forfeiting their current roles, for example, in 1999 the Center for Continuing Education (CCE) in Botswana launched a Diploma in Primary Education distance education programme, to upgrade academic and professional qualifications of some 8000 primary certificate holders to diploma level. However, those teachers could not be released to attend courses in conventional institutions without compromising primary school work progress (Nage-Sibande, 2005: 250). Sometimes work and family life are core determinants to furthering education. Universities provide opportunities for students to choose their mode of learning as well as setting their pace of study. The University of Botswana (UB) like many other universities around the globe offers students the option to study and carry out other life commitments at the same time. This is in realization of the fact that learning part-time is a very important alternative and an opportunity for people to continue learning while they go on with their normal workloads and family or community responsibilities (Nage-Sibande, 2005). This paper will focus on students pursuing Part-time Diploma in Accounting and Business Studies programme (DABS) based at different geographical locations in the country. It is intended to discuss the plight of these students with regards to their lack of participation in the information literacy skills programme (ILS) offered to full-time undergraduate students as well as the inadequate access to both Information and Communication Technology and library resources. The paper will also discuss how their lack of access to ICT resources continues to widen the digital divide between those having access and those without access. Based on the authors' past participation in the teaching of ILS to DABS students it will discuss the pivotal role played by UB staff in the teaching of Information Literacy Skills (ILS) to DABS students as well as the collaborations and partnerships between librarians and other stakeholders such as the Extra Mural Unit of the Center for Continuing Education (CCE); Communication and Study Skills Unit (CSSU) and Computer Science which made it possible for Librarians to actively participate in the teaching of ILS. Further, the paper will discuss the problems experienced regarding issues of student support and access to and provision of resources, which are essential to the successful provision of courses taken by part-time students. Lastly, the paper will discuss efforts made by the CCE, North branch library, in Francistown, which is the outreach arm of the Department of Library Services at UB, in ensuring that library materials are provided to satellite centers outside Francistown through Technical Colleges, and the challenges experienced in the process.

Keywords: Part-time learners, librarians & information literacy skills, ICT & digital divide

Introduction

The Department of Library Services has been offering information literacy skills to year one students since 2002.The information literacy skills were offered under the umbrella of the General Education Courses. The GEC 121/122 were the two modules offered following a directive from the then Deputy Vice Chancellor, Academic Affairs. (DVC, AA) The DVC (AA further directed that the Computer and Information Skills courses should be developed within the framework of the General Education programme (Ojo, 2005). Among the students taught GEC 121/122 was the

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Diploma in Accounting and Business Studies students (DABS) students. The GEC 121/122 programme ran until 2010 after which a new improved programme, Communication and Academic literacy (COM) programme came into being, coordinated by Communication and Study Skills Unit of the Centre for Academic Development. The intention of the new programme was for information literacy skills to be embedded into the university curriculum. In terms of coverage the GECs 121/122 were offered to all new University of Botswana students regardless of their geographical location. What this means is that for purposes of teaching GECs 121/122 arrangements to teach DABS students were coordinated by the Extra-Mural Unit of the Centre for Continuing Education under the auspices of the Faculty of Business, university of Botswana. Staff had to apply **(see the table below)** and those who met the requirement set were scheduled to teach in either the Gaborone Centre or in other centres outside Gaborone such as Lobatse, Jwaneng, Mahalapye, Selibe-Phikwe, Maun and Francistown where DABS students were located.

Information Literacy

Information literacy is defined by Andretta (2005 : 15) as the ability to identify the need for information, know the importance of accurate and authentic information; develop search strategies to assist in finding information; source information; evaluate; use and organize information effectively. Rader (2002) defines information literacy as skills needed by all citizens to be successful in the information environment of the twenty first century. According to the Alexandria Proclamation of 2005 cited by Catts and Lau (2008) information literacy (IL) is considered essential for individuals to achieve personal, social, occupational and educational goals. Further, Catts and Lau (2008) state that IL skills are necessary for people to be effective lifelong learners and to contribute in knowledge societies.

The following are IL elements that are consistent with the definition of IL developed
for use in higher education and argued by Campbell (2004:9):

a) Recognise information needs
b) Locate and evaluate the quality of information
c) Store and retrieve information
d) Make effective and ethical use of information, and apply information to create and communicate knowledge (Campbell, 2004 :11)

Regarding these elements one has to :
i. Be aware that they require information to solve problems in all spheres of life
ii. Be aware that the skill required to locate information will depend on the context a person is applying their IL skills. In the case of DABS students for example, the IL skills are required to locate information for assignments, projects, etc.
iii. Have the skills required to locate information.
iv. Be able to store and retrieve information
v. Have the capacity to recognise information needs as well as make effective and

ethical use of information, and apply information to create and communicate knowledge (Campbell, 2004:11).

The above elements together with the following competencies according to Rader (2002:141):

a) The ability to determine the nature and extent of the information needed;
b) The ability to assess needed information effectively and efficiently;
c) The ability to evaluate information and its sources critically and to incorporate selected information into one's knowledge base
d) The ability to understand many of the economic, legal and social issues surrounding the use of information;
e) The ability to access and use information ethically and legally.

do not only convey similar sentiments about the critical nature of IL skill but they also show that the concept has been widely documented by scholars .It is therefore critical to come up with solutions that will demonstrate to what extent the concept has adequately been understood by all.

Digital Divide

Digital divide as defined by the United Nations Education, Scientific and Cultural Organization (UNESCO, 2000) is a phenomenon that results from the unequal application of, and access to, information and communication technologies leading to a global gap between information 'haves' and 'have nots'. Cullen (2001) defines digital divide as a gap that exists in most countries between those with access to tools of information and communication technologies and the knowledge that they provide access to and those without such access to skills. He notes that this may be due to socio-economic factors or it may be physical disabilities.) Naidoo and Raju (2012) who have adopted Cullen (2001 : 311) definition refer to digital divide as the gap that exists between those with ready access to information and communication technology (ICT) tools and those without such as skills to enable access. Of the four interpretations provided by Fink and Kenny (2003) there is one that refers to a gap in the ability to use ICTs measured by the skills base and the presence of numerous complementary assets. Campbell (2001:1) states that digital divide refers to situations in which access is a marked gap in access to or use of ICT devices. Compaine (2001) on the other hand define digital divide as the perceived gap between those who have access to the latest information technologies and those who do not whereas Bolt and Crawford (2000 : 39 cited by Ersoy and Guneyli (2016) define digital divide as the gap created by the lack of access to and the manner of use of technology by members of various social identity groups .

For purpose of this paper and its focus on students studying part time the digital divide definition that best describes the DABS situation is the one that makes a distinction between people who do and those who do not have internet access. This paper will focus on the digital divide that result from lack of access to ICT resources and the lack of information literacy training offered by the University of Botswana librarians.

Background of Information Literacy at the University of Botswana

The University of Botswana has accepted IL as a lifelong learning skill. UB Library is the only academic library in Botswana that has been offering information literacy skills since 2002. Prior to that year UB Library used to offer bibliographic instruction to both undergraduate students doing research and also to postgraduate research students. Although bibliographic instruction was not wholly adopted by all faculties it had its merits in faculties that adopted it. There was collaboration between academic staff and librarians who offered it and there were some benefits derived from the instruction by students at that time. IL skills programme at the University of Botswana library was offered as part of the General Education Course from 2002 to 2010. The end of 2010 marked the end of IL skills

Programme being offered as a stand- alone module but is now offered as part of the Communication and Academic Literacy (COM) programme coordinated by the Communication and Study Skills (CSSU) unit of the Centre of Academic Development (CAD). Limited IL skills among library professionals in other Tertiary institutions and poor internet connectivity in some parts of Botswana are some of the constraints delaying full adoption and implementation of IL teaching. The author of this paper while serving on a committee known as the Unified Board of Affiliation Institutions between 2012 and 2016 had the opportunity to assess libraries in institutions affiliated to the University of Botswana. Most of those libraries are still behind where the teaching of information literacy is concerned. With regards to the sister universities, the Botswana University of Science and Technology (BUIST) and the Botswana University of Agriculture and Nature (BUAN) and other tertiary institutions in the country their IL status is not known. The University of Botswana library has made huge strides in terms of ILS programme development and skilled human resources.

Purpose of the Study

The general purpose of this paper was to investigate factors leading to the exclusion of DABS students in the teaching of information literacy skills with the aim of advocating for their inclusion in the information age

Specifically the study seeks to:

1. To create awareness among library professionals of their role in bridging the digital divide
2. To remind librarians of their critical role in advocacy as a tool that could be adopted to speak and argue on behalf of part-time students and other communities they serve with the view to improving the lives of such students and communities. Brey- Cassiano (2008) opines that advocacy is important whether you want to gain support for a new library facility or you want to increase your library's overall budget. The author further posits that when thinking about advocacy it is important to know what you want to accomplish through your advocacy campaign.

3. To suggest alternative approaches that can be adopted by the Department of library Services in addressing issues affecting part-time students with the view of narrowing the divide that already exists between full-time and part-time students

Review of the literature

Research on information literacy clearly shows how essential the skills are for all students. The skills are even more critical for adult and part-time learners, especially those unfamiliar with information systems. The critical role of libraries and librarians in bridging the digital divides is widely documented. Though there are several perspectives regarding the phenomenon there is evidence that libraries have a role to play in bridging the gap between the advantaged and disadvantaged. Kranich (2001) also indicates that librarians have a unique role in leveling the playing field and bridging the widening gap between the information haves and have-nots. Further, she notes that libraries are more essential to the economic wellbeing of their communities, to the advancement of learning, to coping with information overload and to closing the digital divide (Kranich,2001). The important role of the library in student learning is also heralded by (Ojedokun, 2007); (Anunobi, 2013), (Naidoo and Raju, 2011.)

Zhao, Kim, Suh and Du (2007) are of the view that both ICT and the internet allows for the implementation of a wide range of services that have changed the way we interact, communicate, do business or even the way politics are conducted while Cullen (2001) :on the other hand opines that the internet is not in itself an education; neither does it teach literacy. Further, he states that the internet requires highly developed skills to access and interpret information found (Cullen, 2001 : 312). Further, he is of the view that the internet should include access to the more valuable information sources, indexes, full-time databases and journals that are not freely available on the internet leaving researchers in developing countries excluded from knowledge that may be valuable in their subject areas (Cullen, 2001: 311). This is where library professionals come in. They are key to the successful and effective use of ICT through their teaching of information literacy skills. Kranich (2001) states that libraries do not only offer access to computers and networks, but also the content, training and expertise crucial to ensure widespread participation in information society. On the issue of academic institutions playing significant roles, Anunobi (2013) asserts that the university library plays a significant role in university education through its function or processing and dissemination of information. This paper is concerned with the role that the University of Botswana library plays with regards to attempting to narrow the divide between students studying full-time and those studying part-time. In approaching this topic I will consider who DABS students are, where they are located and what role the University of Botswana is playing in ensuring their access to information literacy skills and information and communication technologies

Methodology

This study has relied heavily on observation as a tool for data collection. Information was collected from reports presenting library usage statics. This assisted in investigating library usage by students studying part-time. Experience as a librarian teaching information literacy to DABS

students between 2002 and 2012 was also used to determine ways in which students with access to computers, and information literacy skills coped as compared to those without both computer and ILS background. The author also had an opportunity to communicate through electronic mail with some Coordinators of DABS centres as well as some Library professionals in Francistown and the Okavango Research Institute (ORI) regarding DABS students' access to the internet, Wi-Fi, information literacy and ICT skills. The other data collection method involved desk research. The information collected clearly indicated the extent to which the divide was widening among students studying part-time

Background on DABS Programme and Services Provided for Them

The Diploma in Accounting and Business Studies (DABS) programme runs on part-time basis in the evenings by the Extra-Mural Unit (EMU) of the Centre for Continuing Education (CCE) under the auspices of the Faculty of Business, University of Botswana (Department of Extra-Mural and Public Education handbook, 2007-2008). DABS students are studying part-time in the evenings. In terms of where they are located, there are seven (7) centres where DABS students are located. These are Gaborone, Lobatse, Jwaneng, Mahalapye, Selibe-Phikwe, Francistown and Maun. With regards to how they are being provided for by the University of Botswana Library, there are a number satellite centres through which students were provided for facilitated by a Memorandum of Agreement between the University of Botswana and Botswana Government. In an attempt to give an account of how they used to be provided for the following details will be used:

➢ Teaching of information literacy employed on a part-time basis by the Gaborone Centre for Continuing Education
➢ Provision of library resources through a Memorandum of Agreement between the University of Botswana and the Botswana Government (Expired 2007)

Information Literacy for DABS Students

All part-time lectures including librarians who offered information literacy skills courses were required to apply to the Centre for Continuing Education. If they qualified they were employed for a full academic year. The teaching was done in the evenings and over the week-ends. During practical sessions Library professionals always partnered with Information Technology lecturers who attended to all IT related queries and ensured that computer facilities were functioning well. Library professional would then deliver both GEC 121/122 modules. GEC 121 modules covered theory whereas GEC 122 covered both theory and practical sessions where students were introduced to online and networked databases; Legal issues of Information and different citation styles. Library staff were involved in the teaching of DABS students from 2002 until 2012.

Mini Study Carried Out and Findings

In an effort to find out what the situation was like following the discontinuation of the

teaching of GEC 121/122, a mini study was carried out. The study involved charting with DABS Centre Coordinators; sharing with them on issues regarding the teaching of ILS in the past and wondering how things were going following the discontinued participation by library professionals.

The Table 1 below is a result of what was found out.

Table 1. Status of ILS & Access to ICT by DABS Students

DABS Centre	No. of Students	Mode of Communication	Access to ICT	Teaching of ILS	Access to Library resources
Maun	About 25	Through sms and what's up which are costly for both the Coordinator and students			Had access to Maun T. C. Library * Library under-resourced due to expiration of MOA * Library collection and computers available at ORI * Opening hours not conducive for access into the library by DABS since they are working. * Library operates normal working hours 0745-4.30 p.m... Does not open during week-ends * MTC and Maun Brigades open 0800-1630 Mondays-Fridays * Library closes between 1300 and 1400 during week days DABS students attend lessons from 1730-2000
Mahalapye	About 15	* Use e-mail all the time. * Since most of them are working they access e-mail at work. Sms was best but needed loads of airtime. What's up was another option for communicating with students, but not all students own smart phones.	Students have access to computers during ICT lab sessions. Otherwise students use ordinary classrooms with chalk boards		Students used to attend classes at Madiba Secondary School. Attempts also were made to send book to Madiba Secondary School to be accessed by students
Selibe Phikwe	About 15	Both students and lecturers use their airtime communicate with each other. Noted that it was costly for both parties. Created What's up group for both students and lecturers	Students have access to computers during lab sessions. Student's registration and introduction to use of computers done by the ICT lecturer.	Never had a Librarian who taught students ILS	Students use the Public library. Attempt was made by the Librarian to send books to Selibe Phikwe Technical College for use by DABS students but were turned down due to the expired MOA.

CCE North Francistown Branch Library

Opening hours
At CCE North Branch Library, opening hours were changed by Library Management on several occasions. Initially the library operated normal working hours. Attempts were made to adjust them as follows : 0745-16.30; 09.00-17.45 and 12.45-21.00 hours. The hours were adjusted again in August 2008 as follows : 0745-18.00 Monday to Thursday and Friday 0745-16.30. The library does not open week-ends.

Findings

- ➢ Heavy reliance on social media which is constrained by its cost
- ➢ Library opening hours which are not only restrictive but are also not conducive to learning by students studying part time.
- ➢ Most students are working full time and cannot access the Library over the week-ends
- ➢ Lack of access to computer facilities due to restrictive library opening hours
- ➢ Lack of ILS skills in most centres since the discontinuation of the teaching of information literacy skills by Library professionals in 2012
- ➢ Lack of access to the internet which is available in some Technical Colleges and the Okavango Research Institute in Maun which also close at 16.30 hours when students knock off from their work
- ➢ Poor internet connectivity and low network coverage in some areas outside Gaborone are some of the challenges facing educational institutions in Botswana
- ➢ Intermittent power cuts due to load shedding which affect internet supply

Clearly the table shows that DABS students are deprived of IL skills that are key to active participation in information society. Students' access to ICT skills are only limited to their laboratory training. Lack of access to electronic databases that the library subscribes to in support of the learning and research has also been noted.

The practical implications of the findings are central to the core of IL and ICT as they relate to the acquisitions of skills needed by DABS students especially since they are on their own and need to fend for themselves.

The Role of the University of Botswana Library in Bridging the Digital Divide

One of the values of the University of Botswana that is enshrined in the Strategy, a Strategy for Excellence : the University of Botswana's Strategic Plan to 2016 and Beyond, 2008 : 5) is equity by ensuring equal opportunity and non-discrimination on the basis of personal, ethnic, religious, gender or other social characters. It is this lack of equity in the treatment of students studying part-time that is of concern. Lack of equity in access to resources that is reflected by fewer library

opening hours at CCE North branch library and Maun Technical College as compared to the University of Botswana main Library which opens 0745-1100 p.m. Mondays to Thursdays and 10.00 a.m.-4.00 p.m. on Saturdays; 10.00 a.m. – 1000 on Sundays when the academic year is in session whereas CCE North opens Mondays to Thursdays 0745-6.00 p.m.; lack of equity in the provision of ICT facilities at CCE North branch library; lack of equity in the provision of information literacy skills that would enable DABS to meaningfully and successfully use ICT resources the same way the University of Botswana first year full time students go through Information Literacy Skills training as part of the Communication and Academic Literacy at the beginning of every academic year. As indicated above the CCE North Branch Library and the Maun Technical College which have library buildings are the only institutions that are dedicated for serving the DABS students but their opening hours are not conducive to DABS learning in the sense that they close as early as 4.30 p.m. and 6.00 p.m. Not only does access to the library afford students the opportunity to use the collections and other resources, it also gives them the opportunity to interact with staff, to learn how to use these resources and to be empowered with the necessary information and communication technology skills. This is supported by Aqili and Moghaddam (2008 : 229) who are of the view that librarians have a responsibility to train their patrons in modern retrieval strategies; particularly in the use of the internet, World Wide Web, electronic databases so that they are able to access information, communication and technologies. By so doing they will be bridging the digital divide.

Conclusion

There is no doubt that Information is a primary good that everybody needs in order to function effectively. However, people also need the social and cultural 'capital' to use information appropriately, namely, the skills to select and process information and to use it in one's social position and networks (Bornman, Elirea (2016). The review of the literature has shown the critical role of the library in bridging the digital divide both as the place where access to ICT is assured and also as a place where there are information professionals trained in enabling people access, select, evaluate and use it effectively. Van Dijk, (2007), cited by Bornman (2016) is of the view that in an information society, information is regarded as a primary good that everybody needs in order to function effectively. This statement does not only support what has been said by Bornman (2016) it affirms the view that information professionals have a role to play in bridging the digital divide.

This paper has discussed the role played by ICT, libraries and library professionals in bridging the divide. The paper has also talked about DABS and their situation at various centres coordinated by part-time lecturers or computer personnel. It has also discussed the involvement of library professionals in the teaching of information literacy skills between 2002 and 2012 during which Dr Gangappa Kuruba was the Head Coordinator in the Extra-Mural & Public Education Department. Lastly, the author attempted to present some of the challenges faced by students learning part-time .

Recommendations

> ➢ University of Botswana library (UBL) should enable and empower all bonafide students with IL skills to be critical and independent learners
> ➢ UBL should adopt and promote IL as a key component for lifelong learning
> ➢ All new students should be grounded in the same basic IL and ICT skills in order to be able to apply the skills in their learning
> ➢ UB Library should consider developing policies that advocate for the bridging of the digital divide through the provision of life-long learning skills and universal access to ICT.
> ➢ Library management should advocate for the renewal of the Memorandum of Agreement between the University of Botswana and the Ministry of Education. It is key to access to information and computer facilities by students located centres where DABS students are located.

The implications based on results of the study for potential education reforms:

Botswana is committed to lifelong learning and like many countries globally it is constantly reforming its education to be in line with the ever changing socioeconomic situation. The 1994 Revised National Policy on Education (RNPE) was one such effort based on the report of the National Commission on Education 1992/93 established by the president to review Botswana's education system since 1977 (Maruatona, 2011: 125). Among its objectives were the adult learning objectives geared towards ensuring basic education, further education and training that are relevant and available to a larger number of people and for lifelong education to be provided to all sections of the population among which there are part-time learners. (Maruatona, 2011: 125). This clearly shows the extent to which Government of Botswana is committed to inclusive education.

The paper has raised serious issues of inequalities of access to information and ICT resources; social divide between groups due to digital divide. Such issues seriously impact on students' ability to apply the information literacy skills in a digital environment. The lack of access to ICT skills does not only deny part-time learners the opportunity to partake on the knowledge economy due to their lack of the requisite skills but also frustrates efforts by Botswana Government through its education reforms, education policy reviews and other efforts as stated in the country's 2016 Vision which aimed to put the country on an equal footing with other nations (Vision 2016). The Government of Botswana has since the 1970s been aware of the equity issues of education hence the several reforms mentioned above. (Siphambe, 2000), reforms that are meant to empower students with appropriate skills as well as develop in them attributes such as creativity, versatility, innovations, critical thinking and problem solving skills (Tabulawa, 2009).Clearly not every Motswana student can afford to compete at same levels of

education with others due to financial constraints. However, that should not be used against students learning part-time by applying restrictive measures that deny them access to resources and services. Such as unconducive library opening hours The knowledge that education is a fundamental human right should prevail.

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