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A CONCEPTUAL FRAMEWORK OF “TOP 5” ETHICAL LESSONS FOR THE HELPING PROFESSIONS

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One of the important tasks of supervisors and educators in the human service fields is to provide their fieldwork students with models of appropriate ethical behavior and decision-making. The ethical training that educators provide to students in the helping professions will greatly influence how prepared students feel to navigate through difficult ethical situations when they arise in the field. The goal of this article is to introduce a conceptual framework of “Top 5 Ethical Lessons” for the human service professions that is currently in use by social work and school psychology faculty at a large urban university. Training in the “Top 5” Lessons allows graduate students to come away with a new skill set of engaging in the dialogue of ethical decision-making while simultaneously adhering to their field’s ethical principles of respecting individuals, promoting equity, and advocating for social justice.

Keywords: Ethics, helping professions, social work, school psychology

Introduction
Like most soon-to-be human service professionals, graduate students entering the school psychology and social work programs at our urban University are eager to counsel and interact with students and families. In any given year, the student population in these graduate programs is approximately 70% Latino, 15% Euro-American, 10% Asian-American, and 5% African-American. Most graduates are trained in and employed in a large, surrounding urban area upon graduation, working as productive school psychologists and social workers. Our programs each have an emphasis on cultural and linguistic diversity, and entering students make statements such as, “I want to make a difference in the lives of children and families, particularly in ‘at-risk’ populations,” and “I am excited to learn and apply my knowledge in urban school districts.” In sum, they begin their journey to becoming a helping professional eager and enthusiastic to make a difference where it is most needed.

During their training, graduate students in social work and counseling enroll in several quarters of fieldwork in schools and clinics. These fieldwork experiences provide students with opportunities to build connections with the organization, foster awareness and understanding of their role within the organization, and apply the knowledge they have gained from their academic coursework in a variety of classroom and clinical settings. The experience of taking coursework and fieldwork simultaneously allows information to be presented and reinforced in multiple ways and in multiple formats, and encourages the use
of the “theory-to-practice” model in which students use their knowledge to inform and reflect upon their professional practice.

One of the most important roles that field-based experiences accomplish is the ability for new students of the profession to become a “transitional professional” by identifying with and learning from the organizational professional that supervises them. For example, in school psychology, navigating their way through the rough waters of the school system, students rely upon their supervisor to guide them in how to handle district paperwork, time management, counseling, assessment, and consultation with parents and teachers. More importantly, however, the supervising school professional sets a tone for how to conduct oneself as an ethical, honorable professional in a school setting. Kindness in a meeting, proactive sharing of resources, speaking up whenever a child’s welfare is at stake – these are the lasting impressions students leave with that, years later, become the moral fiber in which they conduct their own professional roles.

So one can imagine the faculty dismay when a recent class discussion in the school psychology program on Individual Educational Plan (IEP) meetings (formal meetings that parents and students have with school professionals to address a student’s special education needs) yielded these questionable experiences:

- “I watched the school psychologist tell the parent that they had no more copies of parent’s rights in Spanish, but that she shouldn’t worry about it. If she wanted to know something, she could take the English version home and have it translated. Is this a typical practice?”
- “The school psychologist I’ve been shadowing watched and listened as a teacher, prior to the parent’s arrival at the IEP meeting, made a joke about “apples not falling far from the tree.” I believe he was referring to the child in question being a “slow learner,” as he thought the parent was. The school psychologist finally muttered, “Please, not in front of our graduate student!”

Unfortunately, faculty in the school of social work had similar student tales, many of them describing questionable ethical practices that occurred (or were occurring) in students’ fieldwork settings. Experiences like the ones presented above are disturbing on several fronts. Not only do they challenge the letter and spirit of the law, violating individual’s rights and privacy, but they speak volumes (in some cases, by the mere silence of the professionals in charge) to the graduate student about how to stand up to an organizational culture that has allowed unethical practices to occur. Practices such as placing the onus of translation on a parent during a formal meeting, negotiating IEP cut-off times, and putting up with derogatory comments from teachers, are all acts that no one in the school psychology profession would admit to tolerating. But these kind of “teachable moments,” in which the professional must respond in a

- “The IEP team decided ahead of time that they were only going to allot one hour for the meeting. As 4 p.m. approached all the IEP team members started to rush the paperwork and the principal announced, ‘We only have 5 more minutes’. Is it OK for the team to decide ahead of time that the meeting will end when they want it to, if they are frustrated with the parent’s previous attendance behavior?”
mere split-second to combat these unethical practices do indeed happen, and often happen when ethical vigilance has taken a back seat to outside pressures.

According to ethics consultant David Gebler, “[M]ost unethical behavior is not done for personal gain, it [i]s done to meet performance goals” (Mitchell and Yordy, 2010). In other words, it is not our ego striving to perform unethically, it is our response—often hasty and poorly-judged—to pressure. In each of the above examples, the school psychology professional experienced an “on the spot” moment where they needed to balance ethical actions against the pressure to perform, whether it be facilitate an IEP, meet a deadline, or not “rock the boat” in the spirit of collaboration. To be an adequate professional, however, it is sometimes necessary to take the risk of angering people or slowing down a process in motion in order to uphold the legal and ethical guidelines outlined in our profession. How do we do balance these two demands?

Fortunately, over the past ten years, faculty in our social service programs have supervised graduate students as they work simultaneously with some model fieldwork supervisors – supervisors that our University has chosen to work with repeatedly, not only for their zeal for the profession but for their straightforward and ethical professional practice. Watching and learning from these supervisors over the last decade helped create the basis for a conceptual framework of the “Top 5 Ethical Lessons” that educators and supervisors now try to impart to graduate students in the human services fields at our University. These lessons are outlined here in the hope that they enable educators to fully equip their students with the tools necessary to navigate the often “murky” waters of ethical decision-making in their own practice.

**Ethical Lesson #1: “Look Before you Leap”**

The number one lesson (and perhaps the most fundamental) is to begin solving ethical dilemmas that arise in the field by first grounding ethical dilemmas within the profession’s published ethical guidelines. Within the field of school psychology, these guidelines come from the National Association of School Psychologists (NASP)’s *Principals for Professional Ethics* (2010), which outlines four broad themes subsisting of 17 ethical principles for the field. Similarly, within the field of social work, the National Association of Social Work (NASW)’s *Code of Ethics* (2008) includes core values and principals of the profession and outlines six ethical standards intended to serve as a guide to everyday professional conduct.

Since many ethical dilemmas faced in professional practice are ambiguous and need clarification, merely memorizing long lists of professional ethical guidelines are not enough to guarantee responsiveness and leadership once a “gray” area of ethical practice arises. Using the NASP and NASW ethical guidelines alone are simply not enough to solve the dilemmas that arise everyday in the field. Although both professional ethics codes include some specific mandates, the principles within them are largely broad and abstract and can be vague (Bole Williams, 2011). Moreover, the ethical principles may include ones that compete with each other or with laws and state mandates. Is there some order or weight given to certain ethical principals over others?

To address this issue, the NASP Ethics Committee has recently looked to the Canadian Association of School Psychologists (CASP), which has ordered the four ethical principles published within the CASP ethical guidelines in order to assist practitioners who are facing an ethical dilemma. For example, although the CASP guidelines clearly state that the “complexity of ethical decision-making precludes a firm ordering of the principles,” the
principle of “Respect for the Dignity of Persons,” which emphasizes moral rights, should generally be given the greatest weight above the other ethical principles listed (except in the case where the physical harm and safety of person(s) is at stake).

The importance of these professional ethics codes, then, is not to have students merely memorize them, but to use them as a “go to” guide when they are out in the field and a “sticky” situation arises. How does a social service educator assist students in this endeavor? In training, we have found that the use of “real life” vignettes are vital in fostering critical thinking about ethical dilemmas. Different ethical vignette scenarios are first introduced to a partner or group of students in class. Using their profession’s applicable Ethics Codes, students must then identify which codes are applicable to their specific vignette. Making the time in class to highlight discussion and recognize there are multiple perspectives is key; similar to real-life ethical dilemmas, none of the vignettes offered present a clear-cut, right-or-wrong answer. Instead, graduate students must outline and weigh the benefits and risks of each possible outcome using a multi-step model of ethical decision making.

Ethical Lesson #2: Take COVER: Use of a Multi-Step Ethical Decision Making Model

…[S]teps offer some hope of enriching, not supplanting, mature judgment. They add value by drawing attention to salient features of our ethical understanding, features that might otherwise be lost in the...complexity of...decision making. The [professional] who is “ethically attentive” in facing such complexity stands a better chance of coordinating...administrative and moral points of view.


Real-life ethical dilemmas often involve competing interests of multiple clients (e.g. clients, families, professionals), and published ethical guidelines do not always delineate for the professional whose interests should take precedence. Moreover, according to Bole Williams (2011), published ethical guidelines may not take into account new and emerging ethical issues (e.g. the use of social media) or tell the professional how to confront an unethical practice they observe. The Canadian Code of School Psychologists (2010) notes that when deciding an individual psychologist’s possible violation of ethical guidelines, one of the judgments “…is whether an individual conscientiously engaged in an ethical decision-making process and acted in good faith, or whether there was a negligent or willful disregard of ethical principles.”

Therefore, it is important for students in the helping professions to use an ethical decision-making model in order to analyze the ethical dilemma from multiple angles.

While several multi-step ethical decision-making models have been outlined in the literature in the last fifteen years (including ones specifically outlined for the counseling profession; see Corey, Corey, and Haynes (1998) and Miller and Thomas (1994)), the authors’ have found the most success in training graduate students with Mitchell and Yordy’s (2010) “COVER” Model, an ethical training model borrowed from the legal studies field.
The COVER model engages students in a 2-tier, 9-step process that students can easily remember (courtesy of the accompanying acronyms). The pneumonic “trickery” allows them to guide themselves through the multi-step process on their own (even after their University training has ended).

Mitchell and Yordy (2010) describe each step of the COVER Model in the context of legal studies; however, the basics of the Model are described here within the context of its use in training students in the helping professions of social work and school psychology (see Table 1).

**Table 1. The COVER Model of Ethical Decision-Making**

<table>
<thead>
<tr>
<th>F=Facts</th>
<th>C=Codes</th>
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<tbody>
<tr>
<td>I=Issues</td>
<td>O=Outcomes</td>
</tr>
<tr>
<td>A=Alternatives</td>
<td>V=Values</td>
</tr>
<tr>
<td>S=Stakeholders</td>
<td>E=Editorial</td>
</tr>
<tr>
<td>R=Rules</td>
<td></td>
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</tbody>
</table>

Students begin by memorizing the phrase, “**First I Ask Some questions to COVER my bases.**” The beginning letters of the first half of the sentence, “First I Ask Some…” corresponds to a four-step outline that has students identify the ethical issue by determining the **Facts** involved, identifying the ethical **Issues**, consider the **Alternatives**, and identify all of the **Stakeholders** involved. Mitchell and Yordy (2010) note that these first four steps are not strictly sequential, but may be re-visited as students collaborate with colleagues or other parties.

After these “fact-finding” four steps are complete, students then use the COVER acronym (see Table 2) to make a decision about what next action they should take. Students begin by identifying and analyzing any legal and ethical **Codes** that may inform their decision (see “Ethical Lesson #1), and then identify the possible pro and con **Outcomes** of each alternative course of action. Students then analyze the outcomes in lieu of their own professional **Values**, (such as the ethical principles they believe in, the Golden Rule, etc.), noting how each alternative course of action would affect these values.

**Table 2. The “COVER” Decision-Making Model Process**

| C=Codes: Identify and analyze legal and ethical codes (NASP, NASW) to inform the decision. |
| O=Outcomes: Identify the Pros and Cons outcomes of each alternative course of action |
| V=Values: Review your personal and professional values (e.g. Golden Rule, NASP Principles, mission statement, etc.). How does each alternative affect these? |
| E=Editorial: Analyze the “publicity effect” of any major decision (e.g.”Can/Will I stand by this if word gets out?”) |
| R=Rules: Evaluate each alternative as if it were to become the “rule for all others to follow.” This gives importance to all decisions, rather than thinking “it is just one small violation” |

The authors have found in their practice that the “**V**” in COVER (e.g., having students pause to think about their own personal and professional values in lieu of the outcomes of a decision) is often the turning point that allows students to take ownership over the dilemma. Up to this point in the decision-making model, many students in class have analyzed the ethical vignettes given to them as hypothetical problems to solve, and many feel free to use their creativity to actively outline many possible courses of action. Once their own values are added to the decision-making process, however, the personal investment in the outcome is strengthened and they begin to balance out the myriad demands of realistic and plausible alternatives.

After analyzing how their own values play
a role in the outcome, students then engage in the Editorial test: if an editorial in the local newspaper leaked that they were the ones responsible for making this ethical decision, would they feel comfortable standing by their decision? If not, then they likely need to rethink their decision. Finally, students must evaluate each alternative decision as if it were to become the “Rule for all others to follow.” Engaging in this “rule” test allows students to see that every decision that they make is important, no matter how seemingly trivial; too often fieldwork students may view ethical violations as “just one small infraction” in the greater good of the work being done, particularly if their supervisor in the field sanctions the violation through their own actions (or their silence). Following through with the “Rule” evaluation of outcomes places weight on each violation as a breach of ethics that should not be tolerated, even on a small scale.

As educators in the helping professions, we strive to train students who will uphold the ethical principles of our practice by thinking critically about the decisions that they make and the consequences of those decisions, rather than thinking in “black and white” terms. We have found that the use of the COVER model in our curriculum both encourages and elicits this type of critical thinking, and allows students to take ownership over even seemingly small ethical decisions that at first glance may not appear to have an effect. Moreover, the use of critical-thinking skills in ethical decision-making also reminds students that by the very nature of our profession in the human services field, we “embrace a certain potential for ethical vulnerability” (ASCA, 2006). The recognition that the answer will not always be “given” to them, and that no course of action will be free of problems, allows students to become more comfortable with the ambiguity that is inherent in many ethical dilemmas faced in organizations.

Ethical Lesson #3: You are Not A Wise Owl: The Role of Integrity

The third ethical lesson is important in having students learn to recognize and acknowledge their own limitations within the profession. By their very nature, fieldwork students in the “helping professions” are helpers; often, however, they attempt to help in an area in which they were not trained or prepared. They may feel pressure from clients who believe them to be the “expert” in their role, and may overreach their training and knowledge in an effort to sustain this belief. Faculty in the social work and school psychology program continually refer to this dilemma as the “Wise Owl” effect; in an effort to appear sound and wise, students become afraid to admit that they do not know everything they believe they should know. This makes it difficult for students to refer out, to ask for help from colleagues, or to admit that they do not know the answer. How do you train students to feel comfortable admitting ignorance and seek help?

In order to train graduate students in this third ethical lesson, faculty at our University pair up students several times throughout their fieldwork training and give them an example vignette in which they are unfamiliar. We then ask them to use one or more of the following phrases in a sample dialogue about the vignette with their partner: “I do not know the answer to that,” “I may need to seek out the help of my colleagues and get back to you,” and/or “I will need to refer you to someone that can help you better.” We have found that practicing these “ego-deflating” phrases enables the students to better admit their ignorance in a professional way, and to better understand that admitting ignorance in an unfamiliar content area shows maturity and professionalism rather than a lack of competence. In sum, trying to be “all things to all people” can backfire and create breach the ethical principles of integrity (a guiding principle published in both NASP and NASW).
Ethical Lesson #4: Understand that Confidentiality has Pitfalls

School psychologists and social workers discuss the nature, purpose, and limitations of confidentiality to clients a number of times over the course of their careers, beginning in their graduate training program. While fieldwork students have memorized the “Confidentiality Statement” and the exceptions to confidentiality, we have found over the course of our training of hundreds of students that many students fall into several “confidentiality pitfalls.” For example, fieldwork students often explain confidentiality and exceptions at length at the beginning of a therapeutic relationship with clients, but then fail to mention it after the first or second session. When trust and rapport are well established and the client reveals something harmful to self or to others, confidentiality must be breached and clients may feel slighted, forgetting the confidentiality clause that was mentioned only once or twice in their sessions.

Another pitfall students fall into with respect to confidentiality is ignoring the different types of confidentiality that exist in dual-role relationships. If, for example, the fieldwork student assesses a client, counsels them individually, and then counsels them within a group, different confidentiality rules must be stated for each role the fieldwork student has, and these rules must be stated directly and at the outset of each service. A client who is now a member of a social skills group needs to understand that while the social service worker will promise to maintain confidentiality, the same cannot be guaranteed (even if promised) from among group members.

Finally, fieldwork students often “clam up” when discussing counseling issues with parents and teachers. Faculty in the social work and school psychology programs tell fieldwork students to expect that they may need to disclose some information to the client’s support system (e.g. parents, teachers, other case workers) if they insist on it. As long as they speak in generics, rather than specifics (e.g. “Tommy is doing well with the goals we are setting”), and remind other parties of the confidentiality privileges with the client, they can embrace discussions from others rather than shy away from them in fear of breaching confidentiality.

Ethical Lesson #5: Don’t “Turn a Blind Eye”

Our last main ethical lesson imparted to students in the helping professions is the need to speak up. Often our “failure to act” is as faulty—and as problematic—as a deliberate or proactive course of unethical action. Students may think that they are “not the problem,” but by their silence they can often become the problem. For example, after the COVER model is used and students have decided on an appropriate course of action, students must then decide when and how to speak up, and how to advertise their decision. If they see something unethical occurring in the schools (as in the examples in the outset of this article), do they choose to speak up a) in the moment, b) immediately after a scenario/disclosure has occurred, or c) after the scenario has finished? Embracing the need to display courage, even when it goes against the majority, is a value that faculty try to foster to students in our training programs. The way that courage is displayed, and when, may look different depending upon the ethical situation and the individual’s style and understanding of the dilemma. However, recognizing that silence can equate with complicity is a key lesson, one we strive to impart throughout our training program.

Conclusion

Educators in the helping professions, particularly those with supervisory responsibilities for graduate fieldwork students, have a responsibility to train students in what to do when ethical dilemmas arise in the field.
To ensure that students are equipped with the knowledge and understanding of their role in ethical practice, education trainers must spend the time and commitment on training students in ethical principles and ethical decision-making as they do on other content areas of the field. Learning to rely on and use the published ethical guidelines of their profession is a necessary first step, but not enough to equip students with the means to make valid and useful ethical decisions. Since many ethical dilemmas students face in schools are ambiguous and need clarification, students’ reliance on long lists of ethical guidelines are inadequate to guarantee their responsiveness once they encounter a “gray” area of ethical practice.

How can human service educators help students make ethical decisions when faced with ‘real life’ moments that question their ethical knowledge and integrity? The goal of this article was to provide school psychologists and social workers with a specific theoretical framework and skill set of “Top 5 Ethical Lessons” to use when teaching and preparing students for careers in social work, school psychology, and related helping professions. The use of example vignettes for use in graduate training programs to debate and use the COVER framework in role-plays is a promising practice that we have used with much success, and we encourage the reader to adapt the use of these “ethical lessons” in their own practice. These “Top 5” Ethical Lessons have provided us not only with a specific framework for how to teach students about the often ambiguous ethical situations that arise in their professional practice, but how they can learn to do so in a constructive and thoughtful – rather than an ill-prepared or emotional – manner.

References


IDENTIFYING TRAINEES’ COMPUTER SELF-EFFICACY IN RELATION TO SOME VARIABLES: THE CASE OF TURKISH EFL TRAINEES

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Canakkale Onsekiz Mart University

The purpose of this study was to define the self-efficacy perception of Turkish ELT students and examine the relationship between their self-efficacy and such variables as grade level, computer ownership, first time computer use, and frequency of internet and computer use. The participants are 305 Turkish ELT trainees at Dokuz Eylül University, Turkey. To collect the data, arithmetical means, standard deviation, variance of analysis, and Scheffe test were utilized. The majority of prospective Turkish teachers of English demonstrate a moderate level of computer self-efficacy. It was also found that computer-related self-efficacy perception differs significantly according to when computers were first used and the length of both Internet usage and computer use.

Keywords: ELT trainees, computer self-efficacy, social cognitive theory

Introduction

Development of computers and their use in language have shaped the curriculum and created new areas such as computer-based learning, interactive teaching, distance education, the use of web tools in language learning, learning blogs, Apps for learning are few to mention. Nowadays, it is almost impossible to avoid the use of computers in learning any subject area. Studies reveal that the use of computers in the classroom helps learning (Yılmaz et al., 2004; İnal 2005, Er- can 2005, Philips 2005; Thao 2003) and especially is very effective in foreign language learning to facilitate the learning of authentic language and culture of the target language through communication with native speakers of that language via emails, twitter, Nimbuzz, Facebook, Skype; to read online journals and newspapers, post to blogs in the target language. This will improve speaking as well as pronunciation. The use of computer eases and visualizes learning, expands the vocabulary through interactive vocabulary games; it provides freedom of learning, helps slower students to learn at their own pace and creates fun in the class. Search listserv and library database, watch films and listen to music in the target language are other benefits of computer use in learning. “The unique property of the computer as a medium for education is its ability to interact with the student,” Naba’h, Hussain, Al-Omari, and Shdeifat (2009) as it “enables introvert students to interact better, and creates student-centered form of learning,” (Tanveer 2011.).” On the other hand, the use of computer may reduce the overload work and the role of the teacher; and that of the students in the classroom. However, the integration of computers in the classroom and their effective use heavily depend on the attitudes of the teachers and how they consider them. Such kind of perception is called self-efficacy and accepted as a “thermostat of monitoring the effectiveness of one’s own behaviour,” (Rueda 2008). Self-efficacy is also
believed to lead to high motivation (Bandura 1995, Idrus & Salleh (UD*), Rueda, 2008). To Busch (1995, cited in Sam, Ekhsan, Othman and Nordin (2005) high self-efficacy could be an important factor in helping people learn computer skills and use computers.

**Self-efficacy and Social Cognitive Theory**

Self-efficacy is first proposed by Bandura (1997) within the Social Cognitive Theory. Self-efficacy is “believing in one’s own ability to perform the given type of task,” (Bandura, 1997: 21). Self-efficacy is like the first step of the ladder which will take individuals to the satisfaction of performing their own commitments and most likely to achievement. The studies indicate the relationship between self-efficacy and high possibility of achievement. To Bandura (1982, 1994), self-efficacy perception is based on the idea that individuals set goals in life, and to achieve these goals they should have strong beliefs to perform them, as to him such belief has an impact on achievement and one’s personal judgment about accomplishment is more important than anything. What people think, believe, and feel affect how they behave,” (Bandura 1986, p. 25, cited in Pajares 2002). To Idrus and Salleh (UD), “low efficacy beliefs are characterized by low aspiration and weak commitment to goals and individuals with low efficacy beliefs are more likely to become frustrated when they encounter difficult challenges, and see these challenges as personal threats to be avoided rather than challenges to be mastered.” Likewise, Pajares (2002), refers to the relationship between motivation and self-efficacy as: “Self-efficacy beliefs are correlated with other motivation constructs and with students’ academic performances and achievement.” “A strong sense of efficacy enhances human accomplishment and personal well-being in many ways,” (Bandura 1994). To Bandura, this process is affected by self-regulatory mechanisms, (cited in Pajares 2002) and added, “individuals develop their behaviours rooted in three major concepts: self-concept, self-esteem and self-efficacy which all make up self-regulatory mechanism, and a part of individual’s self-evaluation period,” (Bandura 1995, 1986). “Self-efficacy beliefs help determine the choices people make, the effort they put forth, the persistence and perseverance they display in the face of difficulties, and the degree of anxiety or serenity they experience as they engage the myriad of tasks that comprise their lives. Self-efficacy has received ample attention in educational research, where it has been shown to predict students’ academic achievement across academic areas and levels,” (Ellen & Pajares 2008).

İşiksal & Aşkar (2005) “When individuals are uncertain about the nature of the task, their self-efficacy judgment can mislead them and this is why self-efficacy is a critical determinant of achievement.” To Bandura (1995), four main sources can affect self-efficacy perception; good or bad experience, success or failures, social persuasion which is related to encouragement or discouragement, physiological and psychological factors such as fear or stress but among them individual’s personal experience is seen as crucial. To Pajares (2002), “self-efficacy beliefs exercise a powerful influence on human action, and therefore it should not be overlooked in the teaching and learning process as if individuals believe they have the capacity to achieve the given task or approach a difficult one without fear they will attain their goals.” It is also believed that people with a strong sense of self-efficacy volunteer and participate better in a task, (Kuş 2005). Likewise, a Turkish proverb says “Believing is half of achieving.”

**Computers in language learning and computer self-efficacy**

The concept of self-efficacy has been used in different disciplines as a basic for the belief...
Identifying Trainees’ Computer Self-efficacy In Relation To Some Variables:  / 281

and attitude, (O’Leary 1985; Lev 1997; Schunk 1985, cited in Öztürk & Bozkurt, Kartal, Demir, Ekici 2011). Although the variety of technology and its extensive use has gone beyond one’s imagination with the invention of iphones, webtools, apps etc, computers still remain in the core of teaching and especially language teaching. “Computer use has now become an influential component of second language learning pedagogy and educators recognize that utilizing computer technology and its attached language learning programs create both independent and collaborative learning environments and provide students with language experiences as they move through the various stages of second language acquisition” (Kung, 2002, cited in Wang 2008). The rapid development and effective use of technology have added new sub definitions to the concept of self-efficacy; such as, internet self-efficacy, computer based-language self-efficacy, computer self-efficacy and so forth.

To Sam & et.al. (2005), computer self-efficacy is defined as a specific type of self-efficacy which means belief of one’s capability to use the computer “to mobilize the motivation and cognitive resources (Wood & Bandura 1989:p.408-506, cited in Arani 2001). Participants with little confidence in their ability to use computers might perform poorly on computer-based tasks (Sam & et. al., 2005). Studies also state that good or bad computer experience may affect one’s beliefs toward the use of computer in their learning’, (Sam et. al. 2005). Brosnan (1998, cited in Sam & et.al. 2005) argued that “better computer self-efficacy could increase persistence in studying computing” and this could lead to increase persistence in other computer based subjects such as computer-based science, computer based-art design, computer based-language learning and accordingly this will facilitate learning of related subject. Miura (1987) stated that self-efficacy may play a crucial role affecting the acquisition of computing, however some factors such as ownership of a compute and the frequency of use of a computer may also have an impact on self-efficacy which affects learning (Topkaya 2010).

Studies on Computer self-efficacy and language teaching

The use and usefulness of computers in language teaching is an undoubted fact (Egbert et al. 2002, Brinton 2001, Philips 2005, Thao 2003). Some studies have been conducted in Turkey on computer self-efficacy and its relation to certain variables. Ustuner et al. (2009) found a relationship between high attainment level and self-efficacy of secondary school English language teachers. Öztürk & et. al. (2011) found a significant difference between prospective teachers’ computer self-efficacy perception and grade level but no relationship between achievement and computer self-efficacy perception; their study also differed according to gender in favour of male and showed that the self-efficacy of prospective teachers who took part in the study are at medium level.

Hismanoglu (2011), examined the relationship between computer anxiety and computer attitude of prospective EFL teachers and found no correlation between computer ownership and degree of access to computers and computer attitude of the Turkish EFL students whereas Aydın (2007) found that EFL students have positive attitude in relation to the role of the Internet. Topkaya (2010) examined the computer self-efficacy and the self-efficacy perception of prospective EFL trainees in relation to different variables. She found that high self-efficacy level of Turkish students are at a moderate level and that the high self-efficacy could be related to owning a computer as owning a computer means having more experience and this could lead to high self-efficacy. It is even hard to imagine language learning without integration of
technology and especially that of computers. However, in order for students to develop high self-efficacy in the use of the computer, the teacher themselves should notice the significant use of it in language learning and develop this as attitude. This idea triggered further our understanding of and identify the prospective teachers’ computer self-efficacy in relation to variables such as PC ownership, grade level, previous computer experience, time of first computer use, length of trainees’ weekly computer use, and length of weekly internet use.

To Özçelik & Kurt (2007, cited in Topkaya 2010), “the use of the computer in the classes is determined by the teachers’ beliefs and this will eventually affect learners’ beliefs. The teachers with high self-efficacy employ technology in the classroom more” According to Liaw (1997, cited in Ybarra and Green 2003) teachers should offer English language learners a language-rich environment in which students are constantly engaged in language activities, with computers facilitating this type of environment. The use of computers in class also helps students improve their technological ability and creates an effective learning environment, (Inal 2005, Yılmaz et al. 2004). It improves writing, (Thigpen 2002), and reading (Witkins 2005).

Warschauer (2008), in her research with 167 ESL and EFL students in 12 universities in Hong Kong, Taiwan and the U.S. found that the use of computers in writing classes positively affected students’ motivation. Another study conducted by Lane et al. (2004) examined the relationship between academic performance and the self-efficacy perception of 205 postgraduates. The correlation results in the study indicated significant relationships between self-efficacy and self-esteem and likewise, multiple regression results indicated that self-efficacy mediated the relationship between performance accomplishments and academic performance.

**The Purpose of Study**

The purpose of this study was to determine prospective Turkish EFL teachers’ computer self-efficacy in relation to the variables such as grade level, possession of a computer, first time use of computers, the length of computer and internet use weekly, and attendance at a computer training programme.

**Method**

This research is based on a descriptive study model and explores Turkish EFL students’ computer self-efficacy perception and its relationship, if any, with the variables mentioned above. The participants are 305 Turkish EFL trainees attending 1st, 2nd, 3rd and 4th year classes at the ELT department in Buca Faculty of Education, Dokuz Eylül University, Turkey. The sampling group was chosen randomly.

2.1. Instruments and data analysis

A Likert type computer self-efficacy scale, whose alpha coefficient is 0.71, with five gradations (always, usually, sometimes, rarely and never ) across 18 items, was used. The scale was developed by Aşkar and Umay (2001). In the five point Likert scale, the highest score that can be achieved across all 18 items is 90 (18x5=90), with the lowest being 18 (18x1=18), (see Chart 1). In the data analysis, arithmetic means, standard deviation, variance of analysis and Scheffe test were used. Each response to the questionnaire was calculated by multiplying the value of responses, which varies from 1 to 5, by the number of the questions as displayed below in Chart1.

The instruments used in the study are:

1. Computer self-efficacy Perception Scale
2. Personal Data Form: the participant’s grade level, time of first computer use, previously computer experience,
PC ownership, the frequency of computer and internet use were considered,

Chart 1. Scoring and value for each answer in the scale

<table>
<thead>
<tr>
<th>Answer category</th>
<th>Value</th>
<th>Calculation</th>
<th>Total score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>1</td>
<td>1x18</td>
<td>18</td>
</tr>
<tr>
<td>Rarely</td>
<td>2</td>
<td>2x18</td>
<td>36</td>
</tr>
<tr>
<td>Sometimes</td>
<td>3</td>
<td>3x18</td>
<td>54</td>
</tr>
<tr>
<td>Usually</td>
<td>4</td>
<td>4x18</td>
<td>72</td>
</tr>
<tr>
<td>Always</td>
<td>5</td>
<td>5x18</td>
<td>90</td>
</tr>
</tbody>
</table>

Research questions

This study addresses the following questions:

1. What is the level of self-efficacy perception of Turkish ELT trainees?
2. Does computer self-efficacy perception of trainees vary by their grade level?
3. Does computer self-efficacy of trainees vary according to PC ownership?
4. Does computer self-efficacy perception of the trainees vary on previous experience (previously attending a computer course)?
5. Does computer self-efficacy perception of trainees vary dependent on the time of first computer usage?
6. Does computer self-efficacy perception of trainees vary by frequency of computer use?
7. Does computer self-efficacy perception of trainees vary dependent on frequency of internet use?

Findings

Table 1. Arithmetic means and standard deviation of computer self-efficacy perception by grade level.

<table>
<thead>
<tr>
<th>Grade level</th>
<th>N</th>
<th>$\overline{x}$</th>
<th>SS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year students</td>
<td>60</td>
<td>55.63</td>
<td>9.82</td>
</tr>
<tr>
<td>2nd year students</td>
<td>58</td>
<td>55.00</td>
<td>12.49</td>
</tr>
<tr>
<td>3rd year students</td>
<td>86</td>
<td>53.91</td>
<td>9.77</td>
</tr>
<tr>
<td>4th year students</td>
<td>101</td>
<td>54.74</td>
<td>10.45</td>
</tr>
<tr>
<td>Total</td>
<td>305</td>
<td>54.73</td>
<td>10.53</td>
</tr>
</tbody>
</table>

Table 1 shows slight differences in arithmetic mean between the classes. The arithmetic mean of the total sample is 54.73. This would indicate that the self-efficacy perception of Turkish students is at a moderate level. ANOVA was utilized to determine whether the differences in arithmetic mean between the classes are meaningful.

Table 2 Analysis of Variance related to computer self-efficacy perception of trainees by grade level.

<table>
<thead>
<tr>
<th>Source of the variance</th>
<th>Sum of squares</th>
<th>Sd</th>
<th>Mean of squares</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>109,818</td>
<td>3</td>
<td>36,606</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within groups</td>
<td>33639,670</td>
<td>301</td>
<td>111,760</td>
<td>.328</td>
<td>.805</td>
</tr>
<tr>
<td>Total</td>
<td>33749,489</td>
<td>304</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2 indicates no significant change in computer self-efficacy perception of trainees in relation to grade level (p>.05).
Table 3 Comparison of computer self-efficacy perception of trainees by PC ownership

<table>
<thead>
<tr>
<th>owning PC</th>
<th>N</th>
<th>X</th>
<th>SS</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>156</td>
<td>55.36</td>
<td>11.61</td>
<td>1.070</td>
<td>.285</td>
</tr>
<tr>
<td>NO</td>
<td>149</td>
<td>54.07</td>
<td>9.26</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows no significant difference in computer self-efficacy perception of trainees by PC ownership, despite the arithmetic means of the students who own computers being relatively higher than those who do not. However, p point does not change significantly.

Table 4 Comparison of computer self-efficacy perception according to trainees’ previous computer experience.

<table>
<thead>
<tr>
<th>Attending computer courses previously</th>
<th>N</th>
<th>X</th>
<th>SS</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>93</td>
<td>54.49</td>
<td>10.96</td>
<td>.263</td>
<td>.793</td>
</tr>
<tr>
<td>No</td>
<td>212</td>
<td>54.83</td>
<td>10.36</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4 indicates that there is no a significant difference in computer self-efficacy perception of trainees dependent on their previously attending a computer course.

Table 5 Arithmetic means and standard deviation related to computer self-efficacy perception of trainees in terms of their first time of computer use.

<table>
<thead>
<tr>
<th>First computer use</th>
<th>N</th>
<th>X</th>
<th>SS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>39</td>
<td>60.07</td>
<td>12.06</td>
</tr>
<tr>
<td>Secondary</td>
<td>134</td>
<td>53.35</td>
<td>10.51</td>
</tr>
<tr>
<td>High School</td>
<td>114</td>
<td>54.25</td>
<td>9.191</td>
</tr>
<tr>
<td>University</td>
<td>18</td>
<td>56.44</td>
<td>12.18</td>
</tr>
<tr>
<td>Total</td>
<td>305</td>
<td>54.73</td>
<td>10.53</td>
</tr>
</tbody>
</table>

Computer self-efficacy perception of trainees using a computer for the first time in primary school shows difference, that is, the self-efficacy perception of trainees using a computer for the first time in primary school is relatively higher than the others. ANOVA was used to determine whether the difference between the arithmetic means and computer use period is significant, and Scheffe test was employed to determine the differences between the groups in terms of stages of education.

Table 6 Analysis of Variance results of trainees’ self-efficacy perceptions in terms of length of computer use.

<table>
<thead>
<tr>
<th>The source of the Variance</th>
<th>Sums of square</th>
<th>Sd</th>
<th>Means of squares</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>1445,846</td>
<td>3</td>
<td>481,949</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within groups</td>
<td>32303,642</td>
<td>301</td>
<td>107,321</td>
<td>4,491</td>
<td>.004</td>
</tr>
<tr>
<td>Total</td>
<td>33749,489</td>
<td>304</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Computer self-efficacy perception scores of trainees in terms of their length of computer use show difference in favour of the students using computers for the first time in primary, secondary and high schools. To determine the group differences, Scheffe test was used and the results of the test displayed in Table 7.

Table 7 Arithmetic means and standard deviation related to computer self-efficacy perception of trainees in terms of their weekly computer use.

<table>
<thead>
<tr>
<th>hours of computer use weekly</th>
<th>N</th>
<th>X</th>
<th>SS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>10</td>
<td>49.40</td>
<td>11.65</td>
</tr>
<tr>
<td>1-10</td>
<td>197</td>
<td>54.24</td>
<td>8.90</td>
</tr>
<tr>
<td>11-20</td>
<td>61</td>
<td>53.80</td>
<td>11.52</td>
</tr>
<tr>
<td>21+</td>
<td>37</td>
<td>60.32</td>
<td>14.40</td>
</tr>
</tbody>
</table>
Identifying Trainees’ Computer Self-efficacy In Relation To Some Variables: / 285

The results indicate a significant difference between the length of times devoted to computer use. To determine whether the differences in arithmetic means are meaningful ANOVA was used and to determine the differences within the groups Scheffe test is utilized. The results are presented in Table 8.

**Table 8 ANOVA results related to differences in terms of length of trainees’ weekly computer use and computer self-efficacy perception.**

<table>
<thead>
<tr>
<th>The source of the Variance</th>
<th>Sums of squares</th>
<th>Sd</th>
<th>Means of squares</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>1541,037</td>
<td>3</td>
<td>513,679</td>
<td>4,801</td>
<td>.003*</td>
</tr>
<tr>
<td>Within groups</td>
<td>32208,452</td>
<td>301</td>
<td>107,005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>33749,489</td>
<td>304</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Significant at *p<0.01 level

**Table 8** indicates a significant difference in the computer self-efficacy perception of trainees in relation to the length of their weekly computer use. To determine the source of the difference Scheffe test was utilized.

**Table 9 Arithmetic means and standard deviation related to computer self-efficacy perception of trainees in relation to the length of weekly internet use.**

<table>
<thead>
<tr>
<th>hours of internet use weekly</th>
<th>N</th>
<th>X</th>
<th>SS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>7</td>
<td>52.71</td>
<td>12.09</td>
</tr>
<tr>
<td>1-10</td>
<td>208</td>
<td>54.03</td>
<td>9.05</td>
</tr>
<tr>
<td>11-20</td>
<td>63</td>
<td>56.46</td>
<td>12.52</td>
</tr>
<tr>
<td>21 and more/onwards</td>
<td>27</td>
<td>56.59</td>
<td>14.89</td>
</tr>
</tbody>
</table>

The means related to the hours of weekly internet use shows that computer self-efficacy perception scores differ according to the length of the Internet use. To determine if there is a significant difference between arithmetic means ANOVA was used and the results are presented in **Table 10**.

**Table 10 ANOVA results related to trainees’ computer self-efficacy perception in terms of hours of weekly internet use.**

<table>
<thead>
<tr>
<th>Source of the variance</th>
<th>Sums of squares</th>
<th>Sd</th>
<th>Means of squares</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>410,198</td>
<td>3</td>
<td>136,733</td>
<td>1,234</td>
<td>.297</td>
</tr>
<tr>
<td>Within groups</td>
<td>33339,290</td>
<td>301</td>
<td>110,762</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>33749,489</td>
<td>304</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table 10** indicates that there is not a significant difference between trainees’ computer self-efficacy perception in terms of frequent use of weekly internet use, (p>.05).

**Results and discussion**

Results show that prospective Turkish EFL teachers’ computer self-efficacy perception is at a moderate level (X 54.73). Although this finding is not very high one can still say that Turkish ELT trainees have the necessary attitudes and perception to integrate computers in their classes. To increase the trainees’ perception and help them improve their computer skills, computer courses taught at the faculties in Turkey should be tailored with English language teaching curriculum to teach how to integrate these skills into their teaching practice.

The trainees’ self efficacy does not show any significant difference by grade level. This finding tallies with Topkaya’s (2010) study of 288 EFL trainees which also found their self-efficacy perception to be at a moderate level. The results between the groups show that the third year students’ self-efficacy perception is at the lowest, and first year
students’ at the highest level. This result does not reflect the expectations as the third and fourth year students were expected to have higher self-efficacy perception due to their increased levels of computer experience. It was expected that the older students gain higher levels of computer exposure in senior classes and would affect their self-efficacy perception, as mentioned in the earlier studies (Akkoyunlu & Orhan, 2003; Akpinar, et al., 2007).

No significant difference was found between prior computer experience and self-efficacy (see Table 4) as mentioned in the earlier studies, Aşkar & Umar (2001, Akpinar, et al. (2007).

The relationship between owning a computer and the level of computer self-efficacy was also explored; however, computer ownership does not affect computer self-efficacy perception in this study. A considerable number (50%) owns personal computers, thus having access to computers outside the workplace.

Although studies such as Hasan (2003) and Aşkar & Umay, (2001) found that attendance at a computer course positively affects computer self-efficacy perception, this study did not validate this finding. However, one possible explanation for those who had not previously attended a computer course but who showed high self-efficacy perception, is the ease of access students now have to computers and the internet, with this increased accessibility being the potential cause of the difference.

The participants started using computers in primary school were found to have the highest self-efficacy perception compared to those who started at later stages of education. A meaningful difference was found between students using computers for less than 1 hour; for 1 to 10 hours, for 11 to 20 hours and 21+ hours a week. Self-efficacy perception is higher among the students using computer 21 and over hours per week. That is self-efficacy perception scores are the highest among the students using computers 21 hours or more weekly. Concomitantly, computer self-efficacy increases as duration of weekly computer use increases. Likewise, the self-efficacy perception of the participants using 21+ hours of internet is the highest and self-efficacy perception decreases in line with decreasing hours of internet use. This shows that the self-efficacy of students using computers and Internet more often is higher than those who do not. Accordingly, the longer time is spent on computers and Internet the higher computer self-efficacy will be. Based on this finding, one can posit that early experience of computer use, alongside frequent computer and the Internet use can positively impact on students’ computer self-efficacy perceptions. This finding is consistent with the study of Akpınar and et al. (2007). Yang et al. (2007) found that the length of internet use significantly influenced both self-efficacy perception and language use. Given the teacher’s guiding role and the rapid development of technology in learning, it is essential that teachers themselves have high computer self-efficacy perception in order to be able to effectively use technology in classroom as teachers’ self-efficacy may eventually affect their students’ self-efficacy. To have good attitudes and high self-efficacy are crucial in terms of integrating computer in foreign language classes as Turkish ELT students don’t have much opportunities for practicing their language skills but this integration in a sense can provide this opportunity.

4.1. For Further Studies

Beyond the current findings, given the effects of individual attributes in learning it will be of value to study factors such as achievement, attitude, gender, and age which are not included in the present study but that may affect self-efficacy perception and its effectiveness in EFL classes. Age related studies may reveal interesting results as now the learners are considered as native digitals and non-native digitals.
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*Unknown Date
Technology is ever-changing. We are living in a world that consists of constant change and advances with technology, the workforce, the classroom, etc. Technological advances are great, but we are faced with a problem. Educators are wedged in old teaching strategies and are reluctant to change their teaching approaches; hence, our students are becoming victims of not being properly educated for the world beyond the classroom.

In order to incorporate technology and not become overwhelmed, it is important to start small. Begin with technologies that are consistently used in our society and ones that our students are knowledgeable of. By doing this, we will lessen the stress load and work our way up to incorporating more advanced technologies. How do we begin to incorporate technology in the classroom?

Let’s begin by asking, “What are our students taking part in on the web?” and, “What are our teachers taking part in on the web?”

One thing comes to mind. Social media. Can educators honestly say that their students stop the use of social media once they enter the doors of their classroom? I think if we are rational and honest with ourselves, even though we like to think our students give us their undivided attention, we can admit that our students do still use their phones and social media even inside the walls of the classroom. So, let’s use cell phones to our advantage.

It has been proven that in order for students to become interested in a specific topic, it is important to activate prior knowledge and begin with something that is of concern to them. It is sad to say, but I am certain my middle school students are more up to date on current technology trends than I am. They educate me on a regular basis about advances concerning the latest technologies. Not long ago, my students wrote an argumentative paper on the topic of “Teens and Social Media.” They were to voice their claims about whether or not teens are responsible enough to have constant and unsupervised access to the internet and social media sites. Even though there were a few students who argued against teens using social media, majority of the sixth grade class felt it was appropriate for teens to have
unsupervised access to the internet and social media site whenever they chose to do so. It is safe to say that social media helps to activate prior knowledge as well as spark an interest within the students.

Learning can and should be fun for our students. By incorporating social media into the classroom, we are creating a learning pathway that will ensure student success, which is the ultimate goal. What are various social media technologies that can easily be implemented into the classroom?

- **TWITTER**- Classroom Twitter pages can be set up. Students can become followers of this page. Teachers can tweet about upcoming assignments and due dates. Twitter abides by a 140 word count, so students can use this feature to submit short poems or stories. Polls can be taken, and the data collected can be used in math class. School calendar events, discussions, question and answers, pictures, announcements, etc. can be posted using this page.

- **BLOGS**- Blogs can be used to promote classroom discussion. Writing and student responses can be posted on a classroom blog. Students can post questions for teachers or other students to respond to.

- **YouTube**- This video sharing site can be used for students to create and upload digital stories or classroom movies. YouTube is also a source for researching educational videos (with teacher supervision).

- **Pinterest**- Pinterest can be implemented into the curriculum when student assignments and activities require conducting ample amounts of research. Pinterest is a great place to gather, organize, and store researched material. Ideas or comments can be added to pinned material, which is a method for students to add comments or information to a specific item. Collaboration can take by sharing pins with one another.

- **Don’t Forget the Famous Selfies** - Have students to choose a selfie from their Twitter account, Instagram account, Facebook account, etc. Print the selfie, and cut it in half. Students paste one half of the picture onto paper and use the image to complete the lines of symmetry for the other half of the face shot.

Some school systems restrict website visitation to sites like Facebook. There is a simple and easy solution. **Edmodo** provides safe and easy access for all students to be able to learn, share, and collaborate with one another.

Social media can be incorporated into all subject matter. As a result of social media implementation, teaching will be transformed from teacher centered to student centered. Our students will be getting the instruction they deserve. Social media promotes collaboration, creativity, and classroom discussion amongst students. Our students are interacting with one another not only orally, but also in writing. Collaboration will lead to discussion which will lead to creative thinking. By critically engaging our students, we are providing them with crucial interactions deemed necessary to properly function in the technological world that waits beyond the classroom.
I. Problem Statement

Classroom teachers encounter some students who have a very difficult time maintaining focus for extended periods of time. It is common in the beginning of the school year to have a high rate of students participating in lessons, discussions and other learning activities. As time passes, students shift from sitting up straight and being attentive to slumping and laying heads on desks. We often see participation dwindle from the beginning to the end of the day.

This paper focused on the importance of developing a classroom that teaches academics as well as health and fitness. There seems to be a shift in our classrooms from child centered teaching to testing centered teaching. We need to move back to creating a classroom where students are able to release excess energy in order to become more engaged in their learning. Exercise increases attention to various cognitive tasks and can help boost academic performance (Mulrine, Prater & Jenkins, 2008).

The authors believe that the culture of classroom learning takes a negative turn due to the increase of testing pressures. We sense that teachers have a great fear that straying away from academics briefly for movement breaks is a waste of instructional time. We are curious about how this shift has affected attentiveness and focus. In the second author’s classroom, there is a drop in participation and engagement when she doesn’t allow students the time that they need to stand up, stretch and refocus.

This observation resulted to a desire to research what happens when the classroom teacher uses instructional time to build a classroom community where exercise and movement is integral to the educational experience. We believe that classroom teachers will start to see their students in a different lens through the use of exercises and movement learning experiences.

The study was conducted by tracking the results of ten 5th grade students for a period of one week. The students selected for the purpose of the study perform within the average range. Three of the selected students struggle with symptoms of Attention Deficit Hyperactivity Disorder.
II. Review Research of Literature

Some studies suggest that activity in the classroom can aid in the management of Attention Deficit Hyperactivity Disorder. Students with this disorder often struggle with sitting still and maintaining focus for an extended amount of time. Mulrine, Prater and Jenkins (2008) explain that keeping students with ADHD from exercise can cause problems in the classroom. In one classroom they described that students paid much better attention to instruction immediately following directions than before the exercise break. The article warns teachers that because academic rigor is on the increase and physical activity is declining, teachers may see more behavior problems in the future. In the classroom, there are cases of students with Attention Deficit Hyperactivity Disorder who have difficulty controlling their body movements. Teachers often see these students as antsy and disengaged. The purpose of the intervention was to incorporate movement breaks to aid in student’s ability to maintain focus on an academic task.

Donnelly et al. (2013), conducted a study on rigorous physical activity incorporated into the daily curriculum. The intervention was performed over a 3-year period and students received one hundred minutes of physical activity each week. This article makes a strong argument for why schools play such an important role in teaching health and lifetime fitness to children.

The ideas of how to incorporate activity breaks into the daily school day are endless. Teachers can use wake up activities, desk side breaks, acronyms with movements, jogging behind seat (Jones, 2012). Jones also goes on to explain that we have a national dilemma between the balance of academic time and physical activity. Boys who are naturally active are constantly trying to stifle their urge to move and exercise. Jones explains many innovative ideas for connecting bodily movement with learning. She discussed painting a giant world map mural that kids can touch and run around. It was interesting to hear of her successes when it came to educating the mind and the body simultaneously. The more creative we are, the better the chances are that our instruction will stick with the students past the classroom.

Everhart, Dimon, Stone, Desmond and Casilo (2010). worked to identify if student academics will improve if they students are able to have a recess session before academics. The study was conducted on students in primary and intermediate grades. The academic changes with increased physical activity were more profound with students in the upper grade. They found that there is a need for further research on this topic. The results were not consistent among all of the students studied. The primary students did not show academic progress that would indicate a true correlation between physical activity and academics.

Another insightful article was a research student based on incorporating physical activity breaks in a preschool (Wadsworth, Robinson, Beckham & Webster, 2011). In this study, Wadsworth explains the importance of not only using free play in the preschool setting, but also using planned and managed physical activity sessions. They believe that “behaviors established in early childhood years relate to physical activity behavior in later years of life.” The study they conducted showed that students engage in moderate to vigorous activity much more frequently during planned breaks than during their outdoor recess time. This might be true in many school settings. Each day we give our students thirty minutes of physical activity, however most students choose to sit with their friends and talk, rather than being physically active. Some of our fifth graders are overweight and have well established habits when it comes to physical activity. If students are not required to be physically
active explicitly, many students will not make the choice to be active.

Faucette and Patterson (2001) conducted an intriguing study about the way that teachers feel about physical education. They observed five fourth and fifth grade teachers during physical education class. The researchers also conducted interviews in order to assess the teacher’s feelings about their responsibility for teaching physical education in addition to academics. One observation that was identified was that these teachers lacked the knowledge and training to provide adequate physical education. The teachers in the study were passively observing the physical activity and were not engaged in their student’s learning. This study made me question the need for teacher preparation in the area of physical education.

The effectiveness of activity breaks in increasing fitness levels was addressed in the article, “Effect of a Low-Cost, Teacher-Directed Classroom Intervention on Elementary Students’ Physical Activity.” (Erwin, Bieghle, Morgan & Noland, 2011) The study looked at the effects of physical activity breaks on overall steps taken per day. The students in the study accrued 33% more steps than the control group. This study leads me to believe that physical activity breaks will increase the overall health and fitness of the students in my classroom.

There is also a similar study that implemented a new program to increase physical education in schools. This study implemented a specific fitness program called Take 10! The program integrates activity into the academic curriculum (Stewart, Dennison, Kohl & Doyle, 2004). This study tracked fitness data in Kcals burned and in pedometer step counts. The program increased student’s energy expenditure by incorporating the physical activity into academics. With this method students do not sacrifice academic instruction; the activity is the mode of learning.

Recess time across our nation is being cut and removed from many elementary school schedules. Jarret, Dickerson, Maxwell, Hoge, Daview, & Yetley (1998) conducted a poignant study dealing with how students perform academically when recess is or is not present in the student’s school day. The results show that when students are given a recess break they are less fidgety and more on task. The children served as their own controls and were monitored on days with and without recess. The authors explain that “a finding that children are less attentive when they have not had recess implies that adding more instructional time without giving breaks may be counterproductive” (p. 21).

“The Effects of Preferred Activities During Academic Work Breaks on Task Engagement and Negatively Reinforced Destructive Behavior” is a study that analyzes the way that students respond to free choice breaks during their academics (Goddard, Hoch & McGomas, 2002). The study found that the child had much less frequent outbursts when he was allowed to have preferred activity breaks after the completion on an assignment rather than moving to the next task.

I was able to read many studies on how movement breaks will increase academic performance. I am interested to see how my student’s academic performance will be affected by the integration of physical activity. My students are typically very engaged with it comes to any lesson that involves kinesthetic learning.

### III. Instructional Design

The research took place over the course of five one hour periods of math instruction. During this week of math instruction was about the concept of long division. Each day the students learned long division with kinesthetic movements and physical activity breaks. The selected students perform below average in math performance. The students
They also struggle with math concepts with multiple steps and all read far below grade level. Three of the students in my study have Attention Deficit Hyperactivity Disorder, one student has an emotional and behavioral disability. The students have all learned basic division of two digit whole numbers.

The main outcome that we hoped to see was an increased level of student attentiveness throughout my instruction of long division. An additional positive outcome would be a larger percentage of students who are able to grasp the series of steps in long division. We have measured the amount of off task behavior that is present during the instruction of long division. The specific categories of off task behavior that we looked for include head down on desk, pencil tapping, doodling, and not being able to identify the place we are in on the current problem. We also measured their level of success with the task of long division. Each day the students solved problems of increasing difficulty on an exit slip.

The first day of teaching with intervention was a combination of academics and physical activity. Students began by taking the long division pre-test. After the pretest was complete students learned the acronym for long division (daddy divide, mama multiply, sister subtract, brother bring down, rover repeat/ remainder.) On day two the students started the class by standing up and using hand motions. Students finished class by rotating between 15 minutes of academics and five minutes of physical activity. On day two students began class by stretching and doing jumping jacks. They progressed through a review of the long division acronym and then solved three problems. Students did two rotations of 15 minutes of academics and five minutes of physical activity. Class ended with an exit slip involving two long division problems.

Class period three included an interactive math lesson with stations. At each station around the classroom students participated in physical activity and then answered a math problem. Class ended with a three question long division exit slip. Class period four was the last day before the final assessment. On this day students practiced long division with large numbers. Class began by reviewing the long division acronym. Students attempted three long division problems with the teacher, followed by an exercise break. Students solved three questions on an exit slip.

Day five was the last day of the physical activity/long division intervention. Class began by reviewing the long division acronym. Students reviewed by completing six questions with a partner. After each question the students completed a physical activity. The students completed their post-test independently during the last ten minutes.

Technology was embedded throughout all five lessons of instruction. Students were lead through each problem by watching how the teacher solved problems on Elmo while projecting onto the Smartboard. This was very beneficial because students could learn visually by watching and by using auditory listening skills simultaneously. Several of the exercise breaks were activities lead by watching an online video of on the Teachertube.com interactive website. Students were extremely engaged during these breaks due to the aesthetic of the graphics as well as the fun music.

Throughout the study, we have collected data from a pre and post test that was administered to my students before and after the intervention. On days two through four students completed an exit slip that was used as a formative assessment to guide instruction. We have utilized anecdotal notes as well as tally frequency charts in order to track learning behaviors. There were discussions with students daily in order to gain knowledge of their understandings and perspectives.
IV. Data Analysis

The purpose of this teacher-research was to collect data on how the implementation of exercise breaks will affect student learning and student engagement. We had a strong desire to discover the ways in which achievement could be increased by attending to student’s physical needs as well as cognitive needs. The main intervention was to give students physical activity breaks every fifteen minutes throughout the long division lessons. These breaks included dance sessions, stretching, calisthenics, and movement games. Throughout the instruction, we incorporated hand movements to teach the long division acronym. Anecdotal notes were used to record student behaviors throughout this process. Charts were also utilized to monitor specific behaviors that were expected to be elimination or decrease to improve the learning process.

The end goal of the research was to increase success in fully understanding the standard long division acronym. Students were given exit slips each day to monitor gains and progress over each increment of time. Both the pre and post tests were identical and asked students to solve eight long division questions.

We also collected data regarding the learning behaviors that was expected to change. A frequency chart was kept in order to monitor fidgeting, out of seat, and engaging in work behaviors. We tallied each time that a student was playing with their pencil, objects in desks or tapping under the category of fidgeting. We counted out of seat as any time a student stood up or left their area without permission. We tallied the engaging in work category for each student who was fully participating in the long division lessons and working through problems independently.

Before fully analyzing the data that were collected, we made several preliminary observations about the learning process that was occurring through this intervention. Students seemed to lack basic foundational understandings of division. Many had difficulty throughout the process due to the fact that they didn’t have a strong grasp of basic division facts. They struggled with the concept of how many times the divisor goes into the dividend without going over. Many students were out of shape and avoided physical activity. In the beginning students viewed physical activity as a choice rather than as a required task and therefore attempted to avoid the task. As the week progressed students were excited about activity breaks and seemed to be relieved to have the change of pace. The biggest change that was noticed was in the way students began to regard the physical activity as a part of their learning and not as a break in their learning. It was very exciting to watch the activity become part of my student’s learning process and routine.

The data collected were not surprising considering the amount of on task behavior that was witnessed throughout the week. The chart below shows the student’s scores on the pre and post math tests.

Table 1. Student Scores on Pre- and Post Math Tests

<table>
<thead>
<tr>
<th>Student</th>
<th>Pre-Measure</th>
<th>Post-measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 KS</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2 LK</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>3 CH</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>4 CS</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>5 JB</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>6 BP</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>7 TP</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>8 BH</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

There was no huge difference between the pre and post tests, however all students made an improvement. Three students achieved complete mastery and answered every question correct. We believe that the gains may
have been even higher had the students been able to use their notes with the acronym and example problems. Many of the students attempted to write out the steps of the acronym on their paper, yet didn’t complete it. Some students appeared anxious during the assessment and may have been experiencing test anxiety. Students increased their ability to solve these problems independently as indicated by the fact that only two students asked for help during the post test compared with five students during the pretest. The students could work through the steps using the acronym as scaffolding. They increased their speed and accuracy as the week progressed. Students were able to solve problems with fewer errors on the post assessment and were able to complete all questions without leaving questions blank.

The data collected on learning behaviors of students throughout the lessons were more surprising than the academic scores. The amount of students who were fidgeting took a dramatic drop in the five day period. Across the classroom you could sense an increase of calmness and relaxation. The frequency of out of seat behavior dropped as well. We believe that this indicates a possible relationship between movement breaks and a decrease of off task behavior. Students were excited about their learning and seemed to feel that they had the tools that they needed in order to increase their understanding of this skill.

Overall the data collected indicated that the physical activity breaks decrease off task behaviors while increasing the learning of academic content. The physical activity breaks changed the dynamics in the classroom. It seemed we took a shift from teacher directed instruction involving students seated in chairs and listening while the teacher moved around talking to a classroom environment when students could be up talking and movement and truly be holistically a part of their understanding. Giving the students the opportunity to be up and moving seemed to address a need that was not previously being met. Students were calmer and their bodies seemed rested as they worked through the problems.

The decrease in fidgeting seemed to affect the atmosphere of the entire classroom. It was interesting to watch the shift of pencil tappers and desk diggers to calm and engaged students. The change was not absolute, and there are still more gains to be achieved.

V. Reflection of Study and Action Plan

The research created an impact to our teaching and changed the perception regarding the effect on off task behaviors. The students started the long division unit/lesson with many anxieties regarding exercising in front of their peers. It was motivating to watch students’ attitude improve towards incorporating physical activity within the classroom learning activities. Sacrificing small amounts of instructional time for physical activity breaks seems to improve attentiveness of students. The activity breaks were a mix of instructional breaks such as active vocabulary and isolated fitness skills.

<table>
<thead>
<tr>
<th>Observed Event</th>
<th>First Session/Lesson</th>
<th>Second Session/Lesson</th>
<th>Third Session/Lesson</th>
<th>Fourth Session/Lesson</th>
<th>Fifth Session/Lesson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fidgeting</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Out of Seat</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Engaged in work</td>
<td>8</td>
<td>7</td>
<td>9</td>
<td>9</td>
<td>10</td>
</tr>
</tbody>
</table>
This confirms what Jones (2012) stated that students in the classroom need to get out of their seats and stay actively engaged.

In the video of the teaching implementation, the students were seen smiling and excited when asked to stand up for our exercise session. This is not the typical response from fifth graders during transitional times. During the learning activities, students were productive in their work, as well as calm and relaxed.

Jarret, Dickerson, Maxwell, Hoge, Davie, & Yetley (1998), explained that physical activity breaks decrease inattention. Some of the behaviors that I typically consider a detriment to learning vanished. We typically notice a great deal of hyperactivity behaviors throughout the period of math. However, behaviors that I frequently notice during lessons, such as pencil tapping, fidgeting, and out of seat decreased dramatically. The students with Attention Deficit Hyperactivity Disorder responded positively to the breaks. This confirms theories from Mulrine, Prater and Jenkins (2008) that explains that engaging students with ADHD in planned frequent movement activities increases the likelihood that students will experience success. The overall tone of the room took a shift immediately following a break for movement. The student’s bodies seemed calmer and their demeanor changed. The pre-break behavior was often similar to the fidgeting of airport travelers and shifted to seem more like the demeanor of the congregation at a church.

We originally thought this change would be opposite, that the students would be wired after being allowed to get up, jump around and move. During the first couple days the students were excited initially. As the breaks became part of the routine, not special treat, the kids responded calmly to my prompting them to stand behind their chairs.

Another aspect of the project that went very well was the students’ increased ability to work independently. Students were increasingly more able to prompt themselves by thinking back through the acronym and the motions that we learned. In the past we have spent a lot of time walking from desk to desk prompting kids to their next step. We observed that this was less frequently necessary. As we walked around the room we could often hear students reciting the acronym quietly, to themselves. It was very encouraging to see students relying on their memory and the acronym scaffolding to guide themselves through.

Most students reacted positively to the movement breaks, however, two of my students continued to be embarrassed about being up and moving around. Both of these students are overweight and were not comfortable with their bodies. We often allowed these girls to do the exercises in the back of the classroom to avoid feelings of discomfort. It is very important to continue to be sensitive to the emotional needs of students when asking them to step outside of their comfort zone. Fifth graders identify strongly to a feeling that their peers are watching them. This research has prompted me to have a more open conversations with my students about how they feel when they are asked to be active with their peers and how we can make this experience enjoyable for them.

One of the aspects we are most pleased with is the variety of elements in which the students improved throughout the unit/lesson. Of the students tracked through this research, three of the students reached total mastery of the long division concepts. All students made some gains between the pre- and post tests. Students were more confident when it came to their ability to recall the steps to solving long division problems. Aside from learning math, students learned many different quick ways to be more physically active. The activity breaks brought the need for exercise to help improve their focus and thinking. Some students were even able to recognize how their learning behaviors were influenced by the breaks that we took to exercise.
If we were to re-teach this unit we would allow for the use of multiplication charts from the very first day. This tool would have allowed students to focus less on the task of simple digit multiplication and move to a more all-encompassing view of the whole problem. Another improvement would be to spend more time discussing the benefits of exercise to learning. We had this conversation with the students towards the end of the unit but being more candid and upfront may have given my students a greater ability to connect with my mission.

We spent a great deal of time working and collaborating with colleagues in order to conceptualize our research. The research question was developed with the help of many professional learning committee meetings. We noticed that we often spent a great deal of time talking about how inattentiveness affects the learning process. We realized that this was a problem that was happening across the whole grade level. As we started incorporating the activity breaks, some other classroom teachers did the same as well. The teachers were initially skeptical of this implementation. The negative feelings that we encountered in regard to teacher physical education were supported by the work of Faucette and Patterson (2001). They stated that classroom teachers lack the information needed to respect the importance of physical activity imbedded in the curriculum. This research served as a proof for the effectiveness of incorporating physical activity in instruction.

In addition to adding movement breaks throughout instruction we plan to pursue a change in our current recess schedule. Currently our fifth grade receives recess at the end of the day. We have a hunch that this is a negative contributor to the problem of off-task behaviors during learning. Everhart, Stone, Desmond, and Casilo (2010) explained that even when physical activity takes away from other work time, academic progress of students is not impaired.

VI. References


SOCIAL MEDIA: MAJOR TOPICS IN DISSERTATION RESEARCH

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University of West Florida

Although social media (SM) is a ubiquitous feature of modern discourse, few studies have addressed the research domain regarding scope of SM in the scholarly literature. Moreover, the adaptation of SM technology for formal educational purposes has not been without controversy (Bennett et al., 2012). The current study attempts to obtain a typological perspective on the most emphasized research areas on the topic of social media by conducting a content analysis of dissertation research. To that end, a keyword search of the term (Social Media) yielded 662 studies from PROQUEST’S Dissertations & Theses database. Based on the abstract of each study, the author tagged the reference with a descriptor that best represented the main topical focus of each dissertation. The topics that garnered the most research attention, within the domain of SM, were (in rank order): Political issues/Social movements, Marketing/Advertising, College-level educational issues, Organizational-business performance, Crisis-disaster management, Health management, Corporate brand management, Consumer behavior, and K-12 educational applications. Despite pronouncements from the U.S. Department of Education and academic scholars that the formal educational system needs to leverage modern technology in order to enhance student and collaborative learning experiences, scholarly research on the social media-education nexus is in a nascent stage. The current findings provide: a) an exploratory ‘snap-shot’ on the scope of the investigatory domain of SM research, and b) an impetus for further bibliometric study on the extant SM literature appearing in academic journals.

Introduction

While Social Media (SM) is a ubiquitous feature of modern life (Goggin, 2006), its deemed appropriateness for academic purposes in educational settings has generated controversial viewpoints. For example, recent research shows that Web 2.0 technologies can enhance college student engagement, academic performance, and faculty-student interaction, as well as foster administrative communication with students (Collis & Moonen, 2008; Hemmi et al., 2009; Hrastinski & Aghaee, 2012; Junco et al., 2011; Mazman & Usluel, 2010). Moreover, SM applications have been found efficacious in graduate-level coursework (Meyer, 2010). Yet K-12 educational systems tend to be reluctant in embracing social media either for instruction or for faculty and staff general use. Despite the lack of consensus regarding the role of social media in academia today, educational researchers continue to explore whether classroom use and applications have instructional benefits, such as academic interactivity and student engagement (Voorn & Kommers, 2013).
Research attention regarding social media has been expanding at an exponential pace over the past decade (Piotrowski & Kass, 2013) and, thus, the knowledge base on communications technology is rather voluminous. However, since few bibliometric studies (e.g., Gao et al., 2012; Piotrowski, 2012) on the scholarly domain of the SM literature have appeared, the extent of educational aspects of SM research is largely unknown. Thus, mapping the typological structure of the SM literature would be informative. At the same time, research reporting bibliometric analyses of dissertations has recently appeared (Piotrowski, 2014; Stock-Kupperman, 2011). Such findings tend to report academic interests of novice researchers and concomitantly reflect scholarly interest in contemporary emerging areas. To that end, the current study examined the topical areas, within the scope of SM, most emphasized by graduate students in dissertation research.

**Method**

Content analysis is a major approach used in identifying research trends in the literature (Krippendorff, 2004). The data pool for the current study was obtained from PRO-QUEST’s Dissertation & Theses database. A keyword search (conducted July 28, 2014), using the term Social Media, produced 662 ‘hits’. Based on the abstract of each dissertation, the author coded each study with a descriptor that best represented the main topical focus of the research. A frequency tally, across these categories, was maintained until all 662 references were scored. The aggregated tallies served to produce a rank order listing of the most emphasized topical areas in SM research conducted by graduate students.

<table>
<thead>
<tr>
<th>Specific Topics</th>
<th>/</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political issues/Social movements</td>
<td>52</td>
<td>8</td>
</tr>
<tr>
<td>Marketing/Advertising</td>
<td>40</td>
<td>6</td>
</tr>
<tr>
<td>Educational issues-College/University</td>
<td>35</td>
<td>5</td>
</tr>
<tr>
<td>Organizational performance/productivity</td>
<td>34</td>
<td>5</td>
</tr>
<tr>
<td>Crisis/Disaster management</td>
<td>32</td>
<td>5</td>
</tr>
<tr>
<td>Health/Disease management</td>
<td>31</td>
<td>4</td>
</tr>
<tr>
<td>Corporate ‘brand’ issues</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>Consumer behavior</td>
<td>25</td>
<td>4</td>
</tr>
<tr>
<td>Educational issues-(K-12)</td>
<td>24</td>
<td>4</td>
</tr>
<tr>
<td>Public relations</td>
<td>22</td>
<td>3</td>
</tr>
<tr>
<td>Social media use</td>
<td>21</td>
<td>3</td>
</tr>
<tr>
<td>‘News’ media</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>Theoretical issues/models</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>Data ‘mining’</td>
<td>16</td>
<td>2</td>
</tr>
<tr>
<td>Social relationships</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>Communications issues</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Self-presentation</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>Faculty professional development</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>College recruitment/privacy/recreation/sports</td>
<td>10</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note. Total pool n=662; Topics with frequencies 9 or less are not reported; percentage is rounded-off.*

**Findings and Conclusions**

The results of this bibliometric analysis indicate that emergent research regarding the issue of social media (SM) encompasses a broad range of topical areas. Table 1 presents, in rank order, the major issues emphasized by young researchers. It appears that today’s graduate students devote much research attention to the influence that SM technology has on politics and the political process, including social movements. Interestingly, business issues such as marketing, organizational performance and efficacy, brand management, and consumer behavior are popular SM topics. This supports current research on corporate
interest in adaptation of SM for business advantage (Close, 2012).

Recent research in the educational arena finds that implementation of SM for academic purposes predominantly reflects applications in college or university settings (Dunn et al., 2011; Moran & Tinti-Kane, 2012; Wright, 2010). The current analysis corroborates this point of view, although there seems to be evidence for emerging interest in the nexus of SM and K-12 instruction and the professional development of faculty (see Table 1). Indeed, professional development of teachers is a central issue in contemporary education (Shaha & Ellsworth, 2013).

About 10% of the studies in the current study focused on 2 distinct subject areas, i.e., crisis management and health management (Table 1). Perhaps this reflects the attribute of ‘immediacy’ of SM and the potential benefits of SM for public health. Recent studies have reported on the increase in scholarly attention devoted to the use of social media in health/disease monitoring (Piotrowski & Kass, 2013). Perhaps reflecting the seminal nature of SM research, many dissertations examined conceptual models and theoretical issues. Thus it appears that novice researchers are not reluctant to address controversial issues inherent in advancements in SM technology nor the intellectual challenges of advancing the field.

The current analysis identified several areas largely neglected in dissertation research. Topics that receive much attention in the popular media with regard to SM (e.g., privacy, security, cybercrime, harassment, online addiction) are rarely a major focus of dissertation study. The reason for this lapse is not clear. The current findings a) provide an information matrix of specific topical areas emphasized in SM research by graduate students, and b) serve as an impetus for further bibliometric study of SM research appearing in scholarly journals and academic databases.
References


A BOLD STEP FORWARD: JUXTAPOSITION OF THE CONSTRUCTIVIST AND FREESCHOOLING LEARNING MODEL

VICTORIA OLIAKU CHIATULA
Valparaiso University

This article discusses the juxtaposition of learning within the parallel structure of the constructivist and freeschooling models of education. To begin, characteristics describing the constructivist-learning model are provided, followed by a summary of the major components of the freeschooling-learning model. Finally, the parallel structure between constructivist learning and the freeschooling-learning model is outlined, concluding with considerations toward a bold step forward.

Keywords: constructivist-learning model, freeschooling-learning model

Introduction

Education necessitates a bold step forward towards innovative learning practices. This article examines the juxtaposition of learning within the parallel structure of the constructivist- and freeschooling-learning models of education. This parallel structure provides an opportunity for inquiry and further reflection on the nature of learning and the different roles within this process. Henceforth, this article will: (1) describe characteristics of the constructivist-learning model, (2) summarize elements of the freeschooling-learning model, (3) provide a parallel structure between the constructivist-learning and freeschooling-learning models, and (4) conclude with considerations toward a bold step forward for learning practice.

Constructivist-Learning Model

The constructivist-learning model is a major framework guiding educational practice. A core idea of constructivist learning is that:

... every learner has a unique perspective... [therefore] students are empowered to make choices about how and what they will learn [and a shift occurs from] having all learners learning the same thing, [to] allowing different learners to learn different things. (Karagiorgi & Symeou, 2005, p. 18)

In the literature, constructivism as a philosophy reflects variations and degrees of learning. However, as a learning model of education, constructivist learning generally embodies six attributes. They are:

Learners construct their own meaning—learning is an active process whereby learners exercise a high degree of social freedom to explore their own interests and construct their own meaning by interacting with the environment, participating in problem-solving, and engaging in critical thinking within meaningful contexts.

New learning builds on prior knowledge—learners make connections between old knowledge and new information through a process of comparing, questioning, challenging, and investigating.
Adults are learning facilitators—the adult’s role is one of a facilitator/coach in the learning process.

Social interaction enhances learning—the social setting provides learners with the opportunity to compare and share their ideas with others.

Meaningful learning develops through “authentic” tasks—activities are within a meaningful context that is designed to stimulate real-world, case-based learning environments, instead of a predetermined sequence of instruction.

Reflective Practice—the learner is given time to reflect on what he or she has discovered for purposes of collaboration, discourse, and building connections (Brooks & Brooks, 1993; Christie, 2005; Cooperstein & Koevar-Weidinger, 2004; Draper, 2002; Fosnot, 1996; Grant, 1998; Honebein, 1996; Jonassen, 1994, 1999, 2000; Murphy, 1997; Noddings, 1993; Ward, 2001; Van De Walle, Karp, & Bay-Williams, 2014).

Table 1 lists each of the six attributes within a constructivist-learning model, a general description of each, and a summary of the roles of the learner and facilitator within the learning process.

Thus, within a constructivist-learning model, emphasis is on the learner through an active, self-directed process. The learner exercises a high degree of freedom to explore his or her own interests while interacting with the environment and engaging in authentic, real-life tasks. The adult role is one of a facilitator/coach in the learning process (Noddings, 1993; Fosnot, 1996, p. 10; Murphy, 1997, pp. 11-14; Grant, 1998; Ward, 2001; Draper, 2002, p. 521). The freeschooling-learning model parallels similar characteristics with constructivist learning. The next section outlines important elements of the freeschooling-learning model, after which the parallel structure between the constructivist-learning and freeschooling-learning model follows.

Freeschooling-Learning Model

Freeschooling-learning proponents (Lister, 1974; Neil, 1960; Readhead, 1996; Reimer, 1971; Mercogliano, 1999; Miller, 2002; Morrison, 2005) argue that learning is the construction of knowledge or meaning through activities that stem from an individual’s choices and interests, a process called individualization (Morrison, 2005, p. 25). The freeschooling-learning model stresses individualized, rather than group instruction. There are no set curricula; resources from the surrounding community are integrated and used. Play, creativity, and the natural are valued highly (Mercogliano, 1999). This model is based on the belief that no specific curriculum is necessary to prepare children for adult life. Instead, the freeschooling-learning model emphasizes learning as a natural byproduct of all human activity. The focus of the freeschooling-learning model is on the learner as a unique individual innately driven to learn and explore when given the freedom to do so. According to Miller (2002), freeschoolers believe:

… that learning should be intimate, spontaneous, and joyful—specifically not controlled by textbooks, curricula, instructional methods, or hierarchical authority, and they [represent] a shared desire to make learning relevant and responsive to the lively social and political issues of the day. (p. 3)

As a result, freedom of choice and self-directed learning are two essential concepts that frame the freeschooling-learning model. The learner exercises freedom of choice in the learning process; that is, the learner chooses what, how, when, and with whom he or she wants to study. The learner is motivated by his or her interests and proceeds from one step to another at an individual rate of development.
The learner decides what to do with his or her time and learns as a byproduct of ordinary experience, rather than adopting a predetermined educational syllabus or standardized instruction in classes following a prescriptive curriculum (Mercogliano, 1999; Miller, 2002; Morrison, 2005; Readhead, 1996).

There are five characteristics of the freeschooling educational model. The characteristics are: (1) De-emphasis of classes—There is no curriculum or set of required courses. The learner’s interests guide day-to-day activities; (2) Age mixing—The learner is not separated into age groups, rather he or she is allowed to mix freely and interact with those younger and older; (3) Self-directed learning—The learner is free to spend time however he or she wishes; (4) Democratic governance—A democratic governance model is used between the facilitator and learner.
for decision-making and conflict resolution, with each having an equal vote and input regardless of age; (5) Evaluation—The learner is not assessed, evaluated, graded, or otherwise compared with others, rather he or she can ask fellow learners or the facilitator for feedback on his or her performance (Lefty Parent, 2011; Mercogliano, 1999; Readhead, 1996). Table 2 highlights the five elements of the freeschooling-learning model.

Both the constructivist-learning and freeschooling-learning model offer flexibility, creativity, self-reliance, and freedom of choice for the learner. A parallel structure of learning exists with these models. A freeschooling-learning model shifts learning to reflect the construction of knowledge through a process of individualization (Morrison, 2005, p. 25); i.e., a process whereby the construction of knowledge or meaning stems from an individual’s choices and interests. Therefore, there is greater emphasis on personal autonomy and independence, which leads to self-directed learning. The community and adults serve as facilitators and resources. These ideals are also evident within a constructivist-learning model. Applying constructivism to learning places the emphasis on the learners’ active engagement in real-world learning tasks that are designed to promote thoughtful reflection and discussion. The learning facilitator gives general guidance and support, as learners solve problems, inquire, experiment, design, and construct in order to gain deep understanding. Learning in both models allows for the interaction of learners’ lived experiences. Furthermore, both models embrace the integration and application of learning within the real-world context. Table 3 summarizes the parallel structure between the constructivist- and freeschooling-learning models.

The parallel structure of the constructivist-learning and freeschooling-learning model is useful in that it provides a framework for expanding educative discourse about learning and the various roles within this process. First, construction of knowledge stems from the learner’s interests. Second, the learner, who is self-directed, is guided by his or her own pace and has the freedom to make choices within the learning process. Third, the learner actively engages within meaningful contexts and applies real-world learning tasks designed to promote thoughtful reflection and

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Description</th>
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<tbody>
<tr>
<td>De-emphasis of Classes</td>
<td>There is no curriculum or set of required courses</td>
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<td></td>
<td>Learner’s interest guides day-to-day activities</td>
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<tr>
<td>Age-Mixing</td>
<td>Age-mixing is emphasized</td>
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<td></td>
<td>Learners are not separated into age groups, rather they are allowed to mix</td>
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<td></td>
<td>freely, interacting with those younger and older than themselves</td>
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<tr>
<td>Self-Directed Learning with</td>
<td>The learner is free to spend time however he or she wishes and has access to</td>
</tr>
<tr>
<td>Resources and Needed</td>
<td>educational resources</td>
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<tr>
<td>Democratic Governance</td>
<td>A democratic governance model is used between the facilitator and learner</td>
</tr>
<tr>
<td></td>
<td>for decision-making and conflict resolution, with each having an equal vote</td>
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<td></td>
<td>and input, regardless of age</td>
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<tr>
<td>Evaluation</td>
<td>Learners are not assessed, evaluated, graded, or otherwise compared with one</td>
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<tr>
<td></td>
<td>another; rather, they can ask fellow learners or the facilitator for feedback</td>
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<td>on how they are doing</td>
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</tbody>
</table>

Note: Adapted from: (Readhead, 1996, p. 110; Mercogliano, 1999; Lefty Parent, 2011, p. 3).
discussion. Finally, adults serve as resources in a facilitative role that gives guidance and support. As society continues to change rapidly, effective learning demands transformative practices within a multiplicity of educational models designed to accommodate various learner capacities and interests.

**Conclusion: Considerations Towards a Bold Step Forward**

This article has demonstrated a parallel structure between the constructivist-learning and freeschooling-learning model of education. Juxtaposed, both provide innovative learning environments and a platform towards a bold step forward with greater emphasis on creating an innovative model that allows for more flexibility, creativity, self-reliance, and freedom of choice within the learning process. This parallel structure stresses learning opportunities that promote the learner to be proactive, transformative, and innovative. First, it instills the learner’s autonomy in educational choices by starting with embracing one’s individual way, natural curiosity, and interests as the direction and context of learning. Second, it provides learning processes that are: a) fostered within an environment that is individualized, flexible, and adaptive to the learners’ pace and interests, b) embedded within authentic, meaningful tasks presented within the learner’s real-life experiences, and c) shared, inclusive, and collaboratively builds a community of trust and embraces various perspectives. Third, it uses supportive environments that provide the context for learning, allowing for growth, development, and reflection.

To conclude, the juxtaposition of learning within the parallel structure of the constructivist and freeschooling models of education is a bold step forward towards transformative learning practices. Within this parallel structure, the nature and process of learning is fluid and adaptive, fostering decision-making proactive processes that allow the learner to use his or her own interests to self-direct how one learns, not only to self-improve, but more importantly, to innovate and transform the community and make an impact on the global world.

### Table 3. Constructivist-Learning and Freeschooling-Learning Parallel Structure

<table>
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<tr>
<th>Parallel Structure</th>
<th>Constructivist-Learning</th>
<th>Freeschooling-Learning</th>
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</thead>
<tbody>
<tr>
<td>Learning is constructed through an active process</td>
<td>Knowledge is constructed by the learner through an active process shaped by experience</td>
<td>Knowledge is constructed by the learner through the process of individualization</td>
</tr>
<tr>
<td>Learning is self-directed and entails freedom of choice</td>
<td>The learner maintains his/her own voice and interests in the learning process</td>
<td>The learner is self-directed and learns at his or her own pace without any predetermined structure and/or guided curricula</td>
</tr>
<tr>
<td>Learning is embedded within meaningful social context</td>
<td>The learner is engaged in authentic, real-world tasks with collaborative discourse among peers and is encouraged towards reflection and conversation</td>
<td>The learner’s interests guide day-to-day activities and they spend time how they wish</td>
</tr>
<tr>
<td>Learning is supported with a facilitative adult role</td>
<td>Adults are facilitators/coaches</td>
<td>Adults serve as facilitators, resources, and models</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The democratic governance model is used between the facilitator and learner, with each having an equal vote and input</td>
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References


WHICH METHODOLOGY WORKS BETTER? ENGLISH LANGUAGE TEACHERS’ AWARENESS OF THE INNOVATIVE LANGUAGE LEARNING METHODOLOGIES

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The present study investigated whether English language teachers were aware of the innovative language learning methodologies in language learning, how they made use of these methodologies and the learners’ reactions to them. The descriptive survey method was employed to disclose the frequencies and percentages of 175 English language teachers’ responses. Findings revealed that almost all of the English language teachers knew Communicative Language Learning Methodology, but very few of them were aware of other 19 innovative language learning methodologies. Language teachers who made use of the innovative language learning methodologies found them effective. Similarly, language learners as well gave positive feedback about the implementations of these methodologies in their classes.

Keywords: English, Language, Learning, Teachers, Innovative, Methodology, Awareness

Introduction

English language teachers utilize several techniques, practices and strategies which base on methods stemming from approaches or language learning theories shaped by learning theories. (Brown, 2001; Freeman, 2008; Harmer, 2001; Nunan, 1999; Richards & Rodgers, 2002). What they do in class is a reflection of a method, the practice of a particular theory and “the formulation of a solution imposed proactively on the learning process” (Widdowson, 2003, p.19). However, several English teachers apply methodological techniques oftentimes without identifying the theoretical associations. For them, palpable transformations and results are valid and vital, they need to observe student learning and witness the progress. Actually, learning is the overall corollary of education and what ultimately matters for language teachers is the evolution of learning which can only be measured by worthwhile learning outcomes.

On the other, there are of course English teachers who consciously apply the techniques and exploit the principles of the methodologies they espouse. They perceive the theoretical connection between learning theories, approaches, methods and learning. Naturally, “It is extremely difficult to come to conclusions about which approaches and methods are best and/or most appropriate for their own teaching situations” (Harmer, 2001, p.96). They often consider themselves as eclectic if they are choosing from various methods or approaches. However, “eclecticism is not as same as random expediency, an
ad hoc reaction to immediate circumstances, but a matter of choosing from a range of options” (Widdowson, 2003, p.19). Therefore, it is imperative for English language teachers to be familiar with these methods or approaches in order to exploit them properly.

For many years, Communicative Language Teaching has been considered to be a methodological revolution in language learning. “Communicative Language Teaching has now become generalised “umbrella” term to describe learning sequences which aim to improve the students’ ability to communicate” (Harmer, 2001, p.86). There are yet language teachers who still consider this methodology as the last language teaching methodology. In fact, Communicative Language Teaching marked a beginning of radical changes in language learning. Acknowledged facts and practices in language learning were started to be doubted. Grammar teaching became useless; activities and tasks were all communicative, classrooms and materials were recognised to allow more communicative options and opportunities for learners. Language teachers became the principal adherents of the method.

After Communicative Language Teaching, there were significant events which alter the latitude and attribute of learning in general: the integration of computer technologies in education, the influence of constructivist learning theory and the use of the internet in every phase of human life. Similarly, “Language teaching methods have taken different stance towards the personal in language learning” (Huttner, 2012) and learner-centeredness became the principal element in designing, planning and implementing educational practices. In accordance with all these changes, several innovative language learning methodologies have been introduced to language learning. These methodologies adhered to or integrated various theories, approaches and practices of language learning.

Language learning methodologies refer to the “pedagogical practices in general including theoretical underpinnings and related research. Whatever considerations are involved in ‘how to teach’ are methodological” (Brown, 2001, p.15). Similarly, in this study, “language learning methodology” is used to mean the pedagogical practices based on any specific language learning theory, approach and method; Audio-Lingual Methodology not Audio-Lingual Method, for instance. These methodologies all claim to make language learning more effective and more appealing to language learners.

Language learners and teachers are the two central components of language learning process. All language learning methodologies structure almost everything in relation to learners and teachers (Huttner, 2012). Objectives, principles, and techniques are present for learners and teachers. Learners’ and teachers’ roles are theoretically defined according to the methodological practice of language learning methodologies.

The primary role of the teachers is unquestionably to internalise the rationales of the practices of these language learning methodologies. Knowledge of these methodologies “provides an additional avenue for professional growth... not by first entertaining new principles, but rather by trying out new techniques” (Freeman, 2008, p.8). Teachers should not be merely applying theory to practice, but constructing theory and theorising their practice (Huttner, 2012). They have to know the background of the methodologies, their relation to approaches and learning theories, their main objectives and principles, their applications and practices. Only if they are aware of these they can be successful in facilitating learning, constructing theory and theorising their practice. Therefore, language teachers should go beyond Communicative Language Teaching and make use of the existing innovative language learning methodologies.
Aim of the study

The main aim of this study is to investigate whether English language teachers are aware of the innovative language learning methodologies and find out how they utilize them. The study also seeks to locate students’ reactions to the implementations of these methodologies. More specifically, the study tries to find answers to the following research questions:

1. Are English language teachers aware of the innovative language learning methodologies?
   a. If they are, where did they learn/study the innovative language learning methodology?
   b. If they are not, which innovative language learning methodology (ies) do they want to learn/study?

2. How do English language teachers implement innovative language learning methodologies?

3. How do students react to the use of innovative language learning methodologies?

4. What do English teachers think about the effectiveness and future implementations of innovative language methodologies?

Literature review: Brief descriptions of innovative language learning methodologies

Several innovative language learning methodologies are in practice today. All try to make language learning more effective and appealing to learners. English language teachers need to be aware of these methodologies in order to be able to choose what to apply in their classrooms. Communicative Language Learning Methodology structures all language learning process around communication which is considered to be the main aim of using any language. Language learners need to recognize that language is for communication and it is not something beyond their individual control. In this methodology, the learning processes and learning spaces emphasize communication, conveying and negotiating meaning and interpreting. (Davies & Pearse, 2000; Freeman, 2008; Littlewood, 1981; Nunan, 1999). Blended/hybrid Language Learning Methodology combines face to face learning experiences with learning spaces on the web. Blended learning is the thoughtful fusion of face-to-face and online learning experiences. According to Sharma & Barrett the methodology “combines a face-to-face classroom component with appropriate use of technology, such as the internet, CD-ROMs and interactive whiteboards” (2007, p.7). “The basic principle is that face-to-face oral communication and written communication are optimally integrated such that the strengths of each are blended into a unique learning experience…” (Garrison & Vaughan, 2007 p.5).

According to the Collaborative/Cooperative Language Learning Methodology language learners collaborate in order to improve their language abilities. Language learners learn from each other and from their experiences in group work while collaborating. Teachers guide learners on the use of the collaborative and social skills in order to be more effective when interacting with each other (Freeman, 2008). Competency-based Language Learning Methodology in general education refers to all teaching and learning approaches which use competences to structure their learning processes (Kamphorst, Hofman, Jansen & Terlouw, 2013). The methodology focuses on the competences crucial in language learning and tries to improve learners’ cognitive and behavioral competencies.

Connectivist Language Learning Methodology claims to be the latest paradigm in learning. According to Connectivist theory “Learning can reside outside of ourselves
(within an organization or a database), is focused on connecting specialized information sets, and the connections that enable us to learn more are more important than our current state of knowing” (Siemens, 2005, p.8). Language learners establish networks and nodes of learning instances which are all linked with knowledge pipes. Learning occurs and develops through the establishment and use of these networks. Language teachers should facilitate in setting up the networks and nodes of learning. The theory of Constructivist Language Learning Methodology argues that people “construct their own version of reality, and therefore multiple contrasting ways of knowing and describing are equally legitimate” (Brown, 2000, p. 11). Knowledge is not isolated and it is constructed by people using their prior knowledge and interacting with new knowledge. Things then become known or learned, therefore learners should be presented with various options to construct knowledge in their own way by using their prior knowledge and experience. The best way of learning or knowledge construction is discovered by individuals who perform related actions. 

Differentiated Language Learning Methodology targets the language learners with diverse language and intellectual abilities. Learners do not possess the same knowledge and have the same skills and potentials. Teachers accept and build on the premise that learners differ in important ways (Tomlinson, 1999). In fact, this is the case in almost every language class so there is a need to reach every student in order to ensure even participation in learning. Language teachers, according to this methodology, can differentiate materials, the pace of the lesson and assessment during the process of language learning. Learning by Teaching Language Learning Methodology guides students to teach lessons or parts of lessons in order to learn (Gartner, 1971). While preparing to teach the content and during the delivery of the lesson, the learners practice language in every aspects. They spend quality time to prepare and teach during which they practice language. Teachers guide learners on the content and the skills required to perform the necessary tasks during preparation, organization and delivery of learning. According to Lewis (1993), “Lexical Language Learning Methodology is based on the idea that an important part of language acquisition is the ability to comprehend and produce lexical phrases as unanalysed wholes, or ‘chunks’, and that these chunks become the raw data by which learners perceive patterns of language traditionally thought of as grammar” (p. 95). Language learners are presented with more lexis oriented materials and tasks during the learning process. According to the Multiple Intelligences Oriented Language Learning Methodology language learning process focuses on the multiple intelligences of the learners. Language teachers consider their learners’ different intelligences when preparing and delivering the language lessons. The methodology is mainly based on the theory of multiple intelligences which is “a pluralistic view of mind, recognizing many different and
discreet facets of cognition, acknowledging that people have different cognitive strengths and contrasting cognitive styles” (Gardner, 1993). Multiple intelligences refers to a learner-based philosophy that characterizes human intelligence as having multiple dimensions that must be acknowledged and developed in education (Richards & Rodgers, 2002). Neuro-Linguistic Programing Oriented Language Learning Methodology uses the principles and techniques of Neuro-Linguistic Programing which relates words, thoughts, and behaviour to goals and purposes by focusing on effective communication with tools for taking perspectives on issues (Craft, 2001). It is a growth-orientated accepting and emphasising learning as the key element to personal change and development (Tosey & Mathison, 2006). According to the Participatory Language Learning Methodology, language learners should directly be involved in the process of language learning. All materials should be meaningful to learners and be part of their lives. They need to connect the content of language learning with their life experience and participate in the authentic tasks and feel responsible for the events happening around them. “It is not the content of the subject matter texts, but rather content that is based on issues of concern to students” (Freeman, 2008, p.150). This methodology encourages learners to bring real life into the class or take the content of the lesson outside class.

Problem-based Language Learning Methodology claims that people learn when they deal with problems, when they experience the process of problem solving. According to the methodology, language learners focus on solving problems and practice and improve their language abilities meanwhile. In Problem-based Language Learning Methodology, students learn content, strategies, and self-directed learning skills through collaboratively solving problems, reflecting on their experiences, and engaging in self-directed inquiry (Hmelo-Silver, Duncan & Chinn, 2006, p.100). In Project-based Language Learning Methodology language learners are given projects structured around themes, tasks, or problems to complete. During the process of project completion learners collaborate with each other, with their teachers and all necessary people involved. “Often projects emerge out of an authentic context address controversial or significant issues in the society and unfold in unexpected ways (Markham, Larmer & Ravitz, 2003, p. ix). In Reflective Language Learning Methodology, learners reflect on their learning, they apprehend the process of their learning and their intellectual interaction by thinking deeply about their learning experiences. “A focus on the reflective practice of the learner allows the autonomous exploration of real-world issues and an emphasis on professional knowledge” (Ru, Font & Cebrin, 2013). According to Smith & Trede (2013), reflective learning allows students to learn to face situations of uncertainty and manage the risks with autonomy, creativity and professionalism. According to Styles and Strategies-based Language Learning Methodology, learners should be presented with effective strategies which they can use to practice or improve their language abilities and potentials. The learners should try and find out the most effective strategies which function best in their individual learning experience. The methodology aims to assist learners in finding the available strategies, understanding how to structure and use them efficiently and with their learning-style preferences transfer them to new contexts (Cohen, 2011).

In Task-based Language Learning Methodology, language learners are presented with well-structured tasks as the main part of their learning. In other words, instead of language structure, students are presented with a task they have to perform or a problem they have
to solve (Harmer, 2001). “The point of departure is not an ordered list of linguistic items, but a collection of tasks” (Nunan, 1999, p.24). Additionally, because of its links to Communicative Language Learning methodology and support from second language acquisition theorists, task-based learning has gained considerable attention within applied linguistics (Richards and Rodgers 2002). **Web-based Language Learning Methodology** uses Web technologies to make language learning more appealing to anybody with internet connection. It is a language learning methodology that involves the use of the Web and exploits Web materials, resources, applications or tools (Son, 2007). According to **Whole Language Learning Methodology**, learners study the language as a meaning-making system, to be able to use all the skills and elements of the language in order to construct knowledge and meaning. The notion of wholeness of language here suggests that language is not the sum of its various dissectible and discrete parts (Brown, 2001). Learners should also understand language learning as a system of social practices not to perceive it as a study of isolated rules of semantics, syntax and pragmatics.

### Methodology

**Research design**

This is a descriptive study aiming to find out English language teachers’ awareness of innovative language learning methodologies and investigate the use of these methodologies. The internet survey strategies were used to collect data from the participants all over the world. The survey method which usually takes the form of a questionnaire, focuses on a group’s attitudes, opinions, and/or characteristics and is very effective in collecting substantial amounts of information in a relatively short time (Brown, 1988).

**Sampling**

A convenience sample was used to collect data from the English language teacher respondents who were contacted through emails. In order to locate English language teachers, as a first step, educational institutions were found on the internet from different regions. After that, these institutions were scanned to find out whether they have English language units, departments or courses. Then, survey invitation emails were sent to English language teachers listed on their sites. Two hundred e-mails were found for each region. As a first step, 25 invitation emails were sent. The English language teachers were asked to complete the questionnaires and send them back. The first 25 replies from each region were included in the study.

**Participants**

The participants of the study were 175 English language teachers who were randomly selected from educational institutions both public and private in seven different regions of the world. As it can be seen clearly from Table 1, 56 of the teachers were males and 119 females working in different public (102) and private (73) secondary schools. 67 of the English language teachers were between the ages of 21 and 27, 47 between 28 and 34, 44 between 35 and 43 and 17 over 43. The participant English language teachers graduated from different universities of Africa (25), Asia (25), Australia (25), Europe (25), Middle East (25), North America (25), and South America (25). Finally, 65 of them had 1 to 5, 24 had 6 to 10, 47 had 11 to 15, 26 had 16 to 20 and 13 had over 20 years of teaching experience. Concerning their voluntary contribution, on the questionnaires administered, the participants were fully informed about the confidentiality and anonymity of their participation in the study. They were also informed that the study they were participating was scrutinized and ratified by the department’s research and ethics committee.
Table 1. Participants

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<thead>
<tr>
<th>Gender</th>
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<td>Number</td>
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<td>119</td>
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<tr>
<td>Percentage</td>
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<tr>
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<td>26.7 %</td>
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<tr>
<td>35-43</td>
<td>44</td>
<td>25.6 %</td>
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<tr>
<td>Over 43</td>
<td>17</td>
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</tr>
<tr>
<td>Percentage</td>
<td>37.2 %</td>
<td>14 %</td>
<td>26.7 %</td>
<td>15.1 %</td>
<td>7 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Place of Graduation</th>
<th>Africa</th>
<th>Asia</th>
<th>Australia</th>
<th>Europe</th>
<th>Middle East</th>
<th>North America</th>
<th>South America</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Percentage</td>
<td>14.3 %</td>
<td>14.3 %</td>
<td>14.3 %</td>
<td>14.3 %</td>
<td>14.3 %</td>
<td>14.3 %</td>
<td>14.3 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The Type of the School</th>
<th>Public</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>102</td>
<td>73</td>
</tr>
<tr>
<td>Percentage</td>
<td>59.3 %</td>
<td>40.7 %</td>
</tr>
</tbody>
</table>

Data Collection and Analysis

For data collection, a questionnaire containing eight questions aiming at gathering their views concerning the awareness and use of innovative language methodologies was administered to English language teachers. For data analysis, descriptive statistics was used to describe different aspects of the data, which can be (Seliger & Shohamy1989) and was the sole purpose of this research. Obtained data was analysed using IBM SPSS 20 statistical software to find out the frequencies and percentages of research related questions.

Findings

Awareness of the Innovative Language Learning Methodologies

Results concerning teachers’ awareness of the innovative language learning methodologies and their interest to learn them are given in table 1. From the data it is very clear that almost all of the participants knew Communicative Language Learning Methodology. This is because in almost all curricula of English language teacher training programmes, CLLM is allocated the most time. Prospective English language teachers study the methodology in detail and are presented the communicative language practices in actual classroom situations. It is obvious from the data as well that more than quarter of the participants were aware of Content-based, Project-based, Lexical, Web-based, Problem-based, and Participatory language learning methodologies. Less than 10 % of the participant heard of Learning by Teaching, Competency-based, Differentiated, and Connectivist language learning methodologies. From the overall data, it is apparent that English language teachers are less aware of the very new methodologies which in a way are obliged to know and exploit more in their English language classrooms.
Table 2. Awareness of the Innovative Language Learning Methodology

<table>
<thead>
<tr>
<th>Language Learning Methodology</th>
<th>Awareness: Have you heard of the following Language learning methodologies?</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
<td>f</td>
</tr>
<tr>
<td>Communicative</td>
<td>162</td>
<td>94,2</td>
<td>5</td>
</tr>
<tr>
<td>Content-based</td>
<td>76</td>
<td>44,2</td>
<td>48</td>
</tr>
<tr>
<td>Project-based</td>
<td>67</td>
<td>38,4</td>
<td>53</td>
</tr>
<tr>
<td>Lexical</td>
<td>54</td>
<td>32,6</td>
<td>58</td>
</tr>
<tr>
<td>Web-based</td>
<td>48</td>
<td>27,9</td>
<td>62</td>
</tr>
<tr>
<td>Problem-based</td>
<td>46</td>
<td>26,7</td>
<td>63</td>
</tr>
<tr>
<td>Participatory</td>
<td>44</td>
<td>25,6</td>
<td>66</td>
</tr>
<tr>
<td>Task-based</td>
<td>42</td>
<td>24,4</td>
<td>65</td>
</tr>
<tr>
<td>Neuro-Linguistic Programing oriented</td>
<td>38</td>
<td>22,1</td>
<td>67</td>
</tr>
<tr>
<td>Blended/hybrid</td>
<td>79</td>
<td>19,8</td>
<td>79</td>
</tr>
<tr>
<td>Constructivist</td>
<td>30</td>
<td>17,4</td>
<td>71</td>
</tr>
<tr>
<td>Multiple Intelligences Oriented</td>
<td>67</td>
<td>17,4</td>
<td>71</td>
</tr>
<tr>
<td>Whole Language Oriented</td>
<td>21</td>
<td>16,3</td>
<td>72</td>
</tr>
<tr>
<td>Cooperative / Collaborative</td>
<td>43</td>
<td>16,3</td>
<td>72</td>
</tr>
<tr>
<td>Reflective</td>
<td>26</td>
<td>14,0</td>
<td>74</td>
</tr>
<tr>
<td>Strategies-based</td>
<td>35</td>
<td>12,8</td>
<td>75</td>
</tr>
<tr>
<td>Learning by Teaching</td>
<td>19</td>
<td>8,1</td>
<td>79</td>
</tr>
<tr>
<td>Competency-based</td>
<td>11</td>
<td>7,0</td>
<td>80</td>
</tr>
<tr>
<td>Differentiated</td>
<td>25</td>
<td>5,8</td>
<td>81</td>
</tr>
<tr>
<td>Connectivist</td>
<td>16</td>
<td>4,7</td>
<td>82</td>
</tr>
</tbody>
</table>

Interests to Learn/Study Language Learning Methodology

As it can be observed on Table 2, participants chose different innovative language learning methodologies when asked if they were interested to learn/study them. The methodologies that they wanted to learn/study more than 50% were Learning by Teaching, Web-based, Multiple Intelligences Oriented, Problem-based, Cooperative, and Neuro-Linguistic Programing oriented language learning methodologies. Except from Communicative Language learning methodology which almost all respondents knew, most of the participants expressed high interest in learning the innovative language learning methodologies. It is very significant that the English language teachers are prepared to discover and experience more about the innovative methodologies. They are interested in applying these recent conditions of practicing English language. They are not reluctant in the least to change their styles and strategies, which demonstrates their enthusiasm in language learning.
Table 3. Interest to Learn/study Language Learning Methodology

<table>
<thead>
<tr>
<th>Language Learning Methodology</th>
<th>Order</th>
<th>f</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicative</td>
<td>20</td>
<td>4</td>
<td>2.3</td>
</tr>
<tr>
<td>Content-based</td>
<td>15</td>
<td>50</td>
<td>29.1</td>
</tr>
<tr>
<td>Project-based</td>
<td>8</td>
<td>82</td>
<td>47.7</td>
</tr>
<tr>
<td>Lexical</td>
<td>17</td>
<td>42</td>
<td>24.4</td>
</tr>
<tr>
<td>Web-based</td>
<td>2</td>
<td>112</td>
<td>65.1</td>
</tr>
<tr>
<td>Problem-based</td>
<td>4</td>
<td>96</td>
<td>55.8</td>
</tr>
<tr>
<td>Participatory</td>
<td>16</td>
<td>46</td>
<td>26.7</td>
</tr>
<tr>
<td>Task-based</td>
<td>14</td>
<td>54</td>
<td>31.4</td>
</tr>
<tr>
<td>Neuro-Linguistic Programing oriented</td>
<td>6</td>
<td>89</td>
<td>51.2</td>
</tr>
<tr>
<td>Blended/hybrid</td>
<td>12</td>
<td>64</td>
<td>37.2</td>
</tr>
<tr>
<td>Constructivist</td>
<td>9</td>
<td>76</td>
<td>44.2</td>
</tr>
<tr>
<td>Multiple Intelligences Oriented</td>
<td>3</td>
<td>106</td>
<td>61.6</td>
</tr>
<tr>
<td>Whole Language Oriented</td>
<td>19</td>
<td>34</td>
<td>19.8</td>
</tr>
<tr>
<td>Cooperative / Collaborative</td>
<td>5</td>
<td>90</td>
<td>52.3</td>
</tr>
<tr>
<td>Reflective</td>
<td>7</td>
<td>84</td>
<td>48.8</td>
</tr>
<tr>
<td>Strategies-based</td>
<td>13</td>
<td>58</td>
<td>33.7</td>
</tr>
<tr>
<td>Learning by Teaching</td>
<td>1</td>
<td>122</td>
<td>70.9</td>
</tr>
<tr>
<td>Competency-based</td>
<td>11</td>
<td>68</td>
<td>39.5</td>
</tr>
<tr>
<td>Differentiated</td>
<td>10</td>
<td>72</td>
<td>41.9</td>
</tr>
<tr>
<td>Connectivist</td>
<td>18</td>
<td>40</td>
<td>23.3</td>
</tr>
</tbody>
</table>

Place of learning/studying the Innovative Language Learning Methodology

From the data presented on Table 4, participant English language teachers learn/study the innovative language methodologies mostly in universities. Academic institutions of course are the foundation of teacher training and professional guidance for the education of proper practices of English language teaching and learning. The respondent teachers also stated that they used the internet as a second source to learn/study the innovative language learning methodologies. The internet nowadays is becoming the sole source of instant knowledge and information. The teachers should be directed to reliable websites to receive the right and up-to-date sources regarding language learning methodologies. Very few participants learn/study the innovative language learning methodologies through courses, in-service training, seminars, and books/articles. This reveals the demand of organising such events for in-service language teachers. English language teachers need to be informed about the innovative methodologies through academic means.
Table 4. Where did you learn/study the Innovative Language Learning Methodology?

<table>
<thead>
<tr>
<th>Language Learning Methodology</th>
<th>University</th>
<th>Course</th>
<th>In-service Training</th>
<th>Seminar</th>
<th>Books/Articles</th>
<th>The Internet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
<td>f</td>
<td>%</td>
</tr>
<tr>
<td>Communicative</td>
<td>152</td>
<td>88,4</td>
<td>2</td>
<td>1,2</td>
<td>2</td>
<td>1,2</td>
</tr>
<tr>
<td>Content-based</td>
<td>28</td>
<td>16,3</td>
<td>2</td>
<td>1,2</td>
<td>26</td>
<td>15,1</td>
</tr>
<tr>
<td>Project-based</td>
<td>26</td>
<td>15,1</td>
<td>2</td>
<td>1,2</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Lexical</td>
<td>34</td>
<td>19,8</td>
<td>2</td>
<td>1,2</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Web-based</td>
<td>16</td>
<td>9,3</td>
<td>6</td>
<td>3,5</td>
<td>6</td>
<td>3,5</td>
</tr>
<tr>
<td>Problem-based</td>
<td>38</td>
<td>22,1</td>
<td>4</td>
<td>2,3</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Participatory</td>
<td>38</td>
<td>22,1</td>
<td>0</td>
<td>0,0</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Task-based</td>
<td>32</td>
<td>18,6</td>
<td>0</td>
<td>0,0</td>
<td>2</td>
<td>1,2</td>
</tr>
<tr>
<td>Neuro-Linguistic Programming oriented</td>
<td>12</td>
<td>7,0</td>
<td>2</td>
<td>1,2</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Blended/hybrid</td>
<td>12</td>
<td>7,0</td>
<td>2</td>
<td>1,2</td>
<td>4</td>
<td>2,3</td>
</tr>
<tr>
<td>Constructivist</td>
<td>24</td>
<td>14,0</td>
<td>2</td>
<td>1,2</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Multiple Intelligences oriented</td>
<td>22</td>
<td>12,8</td>
<td>0</td>
<td>0,0</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Whole language oriented</td>
<td>20</td>
<td>11,6</td>
<td>0</td>
<td>0,0</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Cooperative/Collaborative</td>
<td>18</td>
<td>10,5</td>
<td>0</td>
<td>0,0</td>
<td>2</td>
<td>1,2</td>
</tr>
<tr>
<td>Reflective</td>
<td>14</td>
<td>8,1</td>
<td>2</td>
<td>1,2</td>
<td>2</td>
<td>1,2</td>
</tr>
<tr>
<td>Strategies-based</td>
<td>6</td>
<td>3,5</td>
<td>0</td>
<td>0,0</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Learning by Teaching</td>
<td>0</td>
<td>0,0</td>
<td>0</td>
<td>0,0</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Competency-based</td>
<td>4</td>
<td>2,3</td>
<td>0</td>
<td>0,0</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Differentiated</td>
<td>2</td>
<td>1,2</td>
<td>0</td>
<td>0,0</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>Connectivist</td>
<td>2</td>
<td>1,2</td>
<td>0</td>
<td>0,0</td>
<td>0</td>
<td>0,0</td>
</tr>
</tbody>
</table>

Implementation of the Innovative Language Learning Methodologies

As seen from Table 5, English teachers implemented language learning methodologies. More than half of them (62.8%) said that they used methodologies’ techniques. This reveals that English language teachers utilize the methodologies when they are aware of them. It also illustrates English language teachers’ readiness of practicing novel techniques. More than 50% of the participants stated that they exploited methodologies’ principles of structuring activities and/or, tasks (59.3), material design and use (54.7), learner roles (53.5), and classroom procedures (52.3). Once again, it is apparent that English language teachers are prepared and equipped to make effective methodological alterations and adaptations in their language classrooms. They are ready to change for the betterment of language learning.
Table 5. Implementation of the Innovative Language Learning Methodologies

<table>
<thead>
<tr>
<th>How do you implement the methodology?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>f %</td>
<td>f %</td>
<td></td>
</tr>
<tr>
<td>Apply its techniques</td>
<td>108</td>
<td>32</td>
</tr>
<tr>
<td>Make use of its principles of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classroom procedures</td>
<td>90</td>
<td>41</td>
</tr>
<tr>
<td>Teacher roles</td>
<td>48</td>
<td>62</td>
</tr>
<tr>
<td>Learner roles</td>
<td>92</td>
<td>40</td>
</tr>
<tr>
<td>Material design and use</td>
<td>94</td>
<td>39</td>
</tr>
<tr>
<td>Structuring activities and/or, tasks</td>
<td>102</td>
<td>35</td>
</tr>
<tr>
<td>Classroom management</td>
<td>46</td>
<td>63</td>
</tr>
<tr>
<td>Error correction</td>
<td>72</td>
<td>50</td>
</tr>
<tr>
<td>Assessment and Evaluation</td>
<td>84</td>
<td>44</td>
</tr>
</tbody>
</table>

Students’ reaction to the Innovative Language Learning Methodologies

When asked about students’ reactions to innovative language learning methodologies, participants stated that students’ reactions were generally positive (% 82,6). The students are the best judges of effective language learning. They are conscious what is advantageous, constructive and valuable in their learning. They value and appreciate all viable instruments of learning and are very critical of ill-functioning practices of language learning.

Table 6. Students’ reaction to the Innovative Language Learning Methodologies

<table>
<thead>
<tr>
<th>How was students’ overall reaction to the innovative methodology you had utilised in your teaching?</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>f %</td>
<td>f %</td>
<td></td>
</tr>
<tr>
<td>142</td>
<td>33</td>
<td>17,4</td>
</tr>
</tbody>
</table>

Effectiveness and Future implementations of the Innovative Language Learning Methodologies

Almost all participant English language teachers (89.5 %) who implemented innovative language learning methodologies found them effective. Concerning future implementation, more than 95 % of the participants stated that they were planning to implement more of the innovative language learning methodologies in the future. This discloses once again the fact that English language teachers are amenable to new and effective applications of language learning. They are motivated when they observe effective learning taking place in their classrooms.
Table 7. Effectiveness and Future implementations of the Innovative Language Learning Methodologies

<table>
<thead>
<tr>
<th>Do you think the innovative methodology you had implemented was effective?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>f</td>
<td>%</td>
<td>f</td>
</tr>
<tr>
<td>146</td>
<td>89,5</td>
<td>29</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Are you planning to implement more of the innovative language learning methodologies?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>f</td>
<td>%</td>
<td>f</td>
</tr>
<tr>
<td>164</td>
<td>95,3</td>
<td>11</td>
</tr>
</tbody>
</table>

Discussions and Conclusion

After Communicative Language Learning Methodology, various language learning methodologies were introduced and practiced in language learning. Several of these methodologies have considered to be very effective and successful. More English language teachers have started to make use of these innovative language learning methodologies in their classrooms. However, teachers need to be aware of these methodologies first and then decide whether they can apply them in their language classrooms. They need to see the links between language learning theories and methodologies in order to be more successful. The present study aimed to find out whether English language teachers were aware of the innovative language learning methodologies and investigate their implementation. From the analysis of the findings, several conclusions were drawn to answer the research questions of the study.

Almost all English language teachers were aware of Communicative Language Learning Methodology, but not many of them were aware of the other language learning methodologies. The analysis of the findings revealed that teachers knew the other language learning methodologies less than 50 %. Fifteen of these methodologies were not known to teachers more than 25 %. There were four language learning methodologies, Learning by Teaching, Competency-based, Differentiated and, Connectivist that were known less than 10 %. In general, we can conclude that English language teachers were not substantially aware of the innovative language learning methodologies.

English language teachers expressed huge interest in learning/studying these methodologies. It is apparent from the findings that they were willing to learn/study these methodologies and implement them in their teaching. They were conscious about the recent changes in education and they realised the need to improve their professional practice. More than half of them wanted to learn/study Learning by Teaching, Web-based, Multiple Intelligence Oriented language learning methodologies.

The analysis of the findings indicated that English language teachers were introduced to the innovative language learning methodologies during their undergraduate studies. Then, they used the internet to learn/study these methodologies. It is apparent from the findings that English language teachers did not learn/study the innovative language learning methodologies through courses, in-service training, seminars or books/articles.

English language teachers who participated in the study stated that they used innovative language learning techniques in the classrooms. They also voiced that they utilised the principles of these methodologies in classroom procedures, in planning their activities and tasks, in designing and adapting materials and in assessing learning. They also stated that they made use of the principles to define or identify their roles as teachers. They used the principles of the innovative language learning methodologies to understand their learners and manage the classroom as well.
It is evident from the analysis of the findings that English language teachers found the implementations of the innovative language learning methodologies effective. They also stated that they had positive reactions from their students towards the implementations of these methodologies. Findings also revealed teachers’ plans to implement more of the innovative language learning methodologies in the future.

Implications

English Language teachers need to follow new advances in language learning to be more effective. Providentially, there are currently more options and opportunities for teachers, administrators and parents to guide and direct student learning. However, the major educational implication of the present study is the fact that most of the language teachers are not aware of the innovative language methodologies practiced in the field. They do not know how they can avail themselves of advanced technologies in their classes through the applications of these methodologies. From the study, it is evidently observed that most English language teachers noticed the motivational factors of applying innovative language methodologies. They observed that through innovative methodologies their students become much more collaborative, active and productive and the classroom practices of language learning more up-to-date and effective. Therefore, English language teachers need to be familiarised with the innovative language learning methodologies without delay. Another educational implication of the study is that English language teachers are willing to update and advance their methodological skills regarding English language learning. It is essential then that the in-service English language teachers be trained on the applications of these innovative methodologies. Language schools, academic bodies and English language associations should collaborate to provide training opportunities for English language teachers about innovative language learning methodologies. More courses, seminars and in-service training opportunities should be made available for pre and in-service teachers. Another important pedagogical implication of the study is the fact that the language teachers use the internet to learn about the innovative language methodologies. The internet has become the most accessible source of knowledge, information and materials for English language teachers. Then it is crucial that English language teachers be directed towards reliable, accurate and meticulous websites structured by experts in the field. English language learners as well could be guided on language learning through these websites. The final implication of the study is that language learners are very positive towards the implementations of innovative language learning methodologies. Learners are positive when they are motivated and when they observe improvement in their learning. They are very critical when the do not not benefit from language learning practices. They value effective instruction, useful and functional learning. Language learners, therefore, should urgently be exposed to innovative language learning methodologies for more effective language learning.
References


REVISITING VIRTUAL FIELD TRIPS: PERSPECTIVES OF COLLEGE SCIENCE INSTRUCTORS

Simon A. Lei
ITT Technical Institute (ITT)

Field trips are an important component of upper undergraduate and graduate-level science courses, especially in the fields of biology, geoscience, and environmental science. Field trips can provide a new perspective to a course’s content and quality. Science field trips can facilitate active student learning, yet often be constrained by time, safety, distance, expense, and great physical exertion. For these reasons, virtual field trips (VFT) have become increasingly popular for the past decade. This paper evaluates instructor perceptions on VFT as part of their teaching tools, and discusses the benefits and drawbacks of using VFT from the perspectives of college science instructors.

Introduction

Field trips and field observations are a fundamental part of some college-level biological, geoscience, and environmental science courses (Lei, 2010). Field trips help bridge formal and informal learning, and prepare students for life-long learning (Tuthill and Klemm, 2002). Field trips are effective for both factual and conceptual learning and for achieving affective objectives (Prather, 1989). Field trips are one way of adding variety to college instruction, thus optimizing teaching effectiveness while motivating student learning (Hofstein and Rosenfeld, 1996; Ignatiuk, 1978). Science field trips can be subdivided into three major categories: campus, off-campus, and virtual trips, with the former two categories being considered as actual field trips.

A virtual field trip (VFT) is a journey taken without actually making a trip to the field site (Woerner, 1999). In reality, it is any trip taken via an alternative means and could include slides, a movie or video, a CD-ROM, or the use of the Internet and Websites about a particular site (Woerner, 1999). Today, however, most people believe that a “VFT” is taken with the computer as the vehicle which “moves” students in virtual time and space to a particular real-world site (Woerner, 1999).

Field trips and field observations can be constrained because of time, safety, expense, scale, distance, or complexity of natural environments (Ramasundarason et al., 2005). For these reasons, VFT are an effective substitute for actual field trips in terms of the development of student knowledge and understanding for examination and investigation purposes (Poland et al., 2003). The purpose of this paper is two-fold: 1) to evaluate instructor perceptions on VFT as part of their teaching experience and 2) to outline the benefits and drawbacks of VFT from the perspectives of college instructors.
Instructor Perceptions On VFT

Field trips are a method of providing field experiences that take students to places where, until now, the instructor could only dream about (Woerner, 1999). These VFT help teach things students might not otherwise learn. Similar to actual field trips, VFT are not inherently effective instructional tools, and learning is a result of careful planning and preparation (Pedretti et. al., 1998; Prather, 1999; Zhao, 1999). As with actual field trips, students need time to explore, make careful observations, take important notes, take wrong turns, test ideas or theories, collaborate, and collect data (Woerner, 1999). Students also need time to learn pre-requisite concepts in order to properly address questions related to VFT.

Virtual field trips using the World Wide Web and new interactive technologies have created new roles for instructors, but have also created new issues and challenges. For instance, instructors need some time to learn how to use the emerging virtual environments (Woerner, 1999). Instructors also need to explore and select ideal virtual field sites before being incorporated into their course syllabi (Table 1). Instructional packet including the time, location, purpose, and significance of VFT, as well as step-by-step procedure must be generated in order to easily guide students during a VFT time. To be effective, a VFT must be properly designed using models and theories of human learning (including active learning) and effective instructional design (Woerner, 1999; Table 1).

In addition, instructors should also assess student learning before, during, and shortly after each VFT. A variety of assessment practices should be used in order to accurately measure student learning and achievement at the college level (Lei, 2010). For instance, instructors may administer a quiz based on required reading materials prior to a VFT. Quiz questions may include the location, purpose, and significance of this VFT. During a VFT, instructors may observe general affective traits of students by using a checklist or a numerical rating scale (Lei, 2010). Such traits may include students’ levels of interest, motivation, appreciation, as well as their attitudes toward VFT (Table

<table>
<thead>
<tr>
<th>Table 1. Possible academic activities before, during, and shortly after a VFT.</th>
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</thead>
<tbody>
<tr>
<td><strong>Academic Activity</strong></td>
</tr>
<tr>
<td>Pre-VFT (Instructional design)</td>
</tr>
<tr>
<td>• Selection of an ideal field site</td>
</tr>
<tr>
<td>• Selection of an ideal Website with hyperlinks</td>
</tr>
<tr>
<td>• Required reading material</td>
</tr>
<tr>
<td>• Instructional packet</td>
</tr>
<tr>
<td>• The exact date (time) of this VFT</td>
</tr>
<tr>
<td>• The exact location of this VFT</td>
</tr>
<tr>
<td>• The purpose and significance of VFT</td>
</tr>
<tr>
<td>• Quiz</td>
</tr>
<tr>
<td>During the VFT (Active learning)</td>
</tr>
<tr>
<td>• Attendance and participation</td>
</tr>
<tr>
<td>• Self-paced navigation by students</td>
</tr>
<tr>
<td>• Observations of natural environment with note-taking</td>
</tr>
<tr>
<td>• Respond to the field packet or exercises</td>
</tr>
<tr>
<td>• Observations of general affective variables of students</td>
</tr>
<tr>
<td>Post-VFT</td>
</tr>
<tr>
<td>• In-class exercise</td>
</tr>
<tr>
<td>• In-class quiz</td>
</tr>
<tr>
<td>• In-class exam</td>
</tr>
<tr>
<td>• Research report</td>
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<tr>
<td>• Research project</td>
</tr>
<tr>
<td>• Portfolio</td>
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<tr>
<td>• Learning or reflective journal</td>
</tr>
<tr>
<td>• Oral presentation</td>
</tr>
<tr>
<td>• Peer evaluation (teamwork effectiveness)</td>
</tr>
<tr>
<td>• Student self-evaluation</td>
</tr>
</tbody>
</table>
1). A checklist or a numerical rating scale is especially useful where much of the assessment depends on classroom observations rather than testing (Lei, 2010). Assessment of a post-VFT may include both quantitative measurements and qualitative descriptions (Table 1). Formal assessment may include, but not limited to, participation, learning or reflective journal, portfolio, research report, research project, oral presentation, as well as peer and student self-evaluation (Lei, 2010; Popham, 2000 and 2002).

**Benefits of Using VFT**

There are a number of benefits when using computer-assisted instruction for VFT (Table 2). Increased student-centeredness through active learning is a major benefit. Students can control the pace of the presentation and complete it at a time which is convenient for them (Belanger and Jordan, 2000; Stainfield et al., 2000). Virtual science field trips have both temporal (time) and spatial (geographic) freedom. In other words, students can visit anywhere in the United States and throughout the world without leaving home or college campus (Chance and LoBaugh, 1994). Such places may include remote, inaccessible, environmentally sensitive, and potentially hazardous areas (Woerner, 1999). From around the world, students can discover grasslands, extreme deserts, high mountain peaks, tropical rain forests, deep ocean floors/trenches, remote oceanic islands, along with the North and South Poles with ease. Students can also access a virtual science tour at any time and often have full control of how much time they spend at these sites.

Because web-browsing is familiar to nearly all students today, they can easily revisit certain virtual field sites at any time without worrying about the safety issues, inclement weather, and great physical exertion, especially for physically challenged students. If the VFT is on the World Wide Web, additional information can easily be obtained through hyperlinks (Belanger and Jordan, 2000; Stainfield et al., 2000). Moreover, instructors can spend more time covering concepts while students access the VFT on their own time and pace (Belanger and Jordan, 2000; Stainfield et al., 2000). Students may participate in VFT and respond to VFT assignments once the pre-requisite materials have been studied. Students may work independently or as a team in order to properly solve problems.

Virtual science trips have added a whole new dimension in terms of facilitating and maximizing student learning. These field trips have provided an important teaching tool for instructors, and, simultaneously, have provided an important learning tool for students.

**Drawbacks of Using VFT**

Although the benefits of using VFT are tremendous, there are also a number of drawbacks that should be considered and carefully evaluated (Table 2). In particular, there are authentic concerns for students, technology, as well as for development and network access costs (Woerner, 1999). Initially, some college students may not be comfortable using the required hardware or software. If students are expected to work at home, instructors will not be able to control the learning environment in which students choose to work (Tuthill and Klemm, 2002). Students and instructors must have access to a computer with Internet connectivity either at home or school. Computers and Website servers can break down periodically, thus increasing the frustration level of both students and instructors. Consequently, they can be easily discouraged due to technical difficulties, and their attitudes toward using VFT would become more negative than ever before.

The development of computer-assisted instruction can be costly if hardware/software must be specially purchased (Tuthill and Klemm, 2002). If students are expected
to access the Internet from home, then they must purchase a connection with an Internet service provider (Tuthill and Klemm, 2002). However, large colleges and universities may provide free or relatively inexpensive access to the Internet (Belanger and Jordan, 2000).

There are additional drawbacks when using VFT (Table 2). For instance, the narratives of professional VFT are written by a variety of professional scientists to address general interests of a large, diverse audience, hence the reading level may be inappropriate to some students at certain grade levels (Tuthill and Klemm, 2002). Such VFT are not in complete alignment with class curriculum, and cannot address specific interests and learning needs of students in the class.

Furthermore, Websites can be notorious for changing to new addresses, or even vanish into non-existence through time without prior warning (Tuthill and Klemm, 2002). Finally, according to many instructors, VFT should not replace actual science field trips (Arrowsmith et al., 2005). Students in the VFT are unable to use their total sensory system as part of their learning experience. Students are not physically being at the field sites in order to observe natural environments and to collect appropriate, original data for further statistical analysis. Virtual field trips are merely a simplification of complex, natural environments.

**Educational Implications**

Science field trips can enhance active student learning at the college level. Field trips can add a whole new dimension to a course’s content, quality, and effectiveness (Lei, 2010; Switzer, 1995). Yet, only a limited number of science instructors take their students on field trips. For instructors who periodically take field trips, they report logistical and instructional drawbacks (Tuthill and Klemm, 2002). Currently, science instructors have an option of using VFT as a teaching tool in order to facilitate and maximize student learning.

**Table 2. Benefits and Drawbacks of having VFT from the perspectives of college instructors.**

<table>
<thead>
<tr>
<th>Instructors’ perspectives</th>
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<tbody>
<tr>
<td>Benefits</td>
</tr>
<tr>
<td>• Cost-saving for food, lodging, and transportation (long-distance site)</td>
</tr>
<tr>
<td>• Avoid inclement weather</td>
</tr>
<tr>
<td>• Avoid extreme physical demand for traveling</td>
</tr>
<tr>
<td>• Avoid safety/liability issues</td>
</tr>
<tr>
<td>• Avoid traveling to distant field sites</td>
</tr>
<tr>
<td>• Avoid traveling to remote sites</td>
</tr>
<tr>
<td>• Avoid traveling to inaccessible sites</td>
</tr>
<tr>
<td>• Avoid traveling to environmentally sensitive sites</td>
</tr>
<tr>
<td>• Avoid traveling to potentially hazardous sites</td>
</tr>
<tr>
<td>• Reduce time needed for administrative (legal) paperwork</td>
</tr>
<tr>
<td>• Technology is user-friendly for nearly all students</td>
</tr>
<tr>
<td>• Student-centered (active) learning</td>
</tr>
<tr>
<td>• Use multiple modes of learning (visual and kinesthetic)</td>
</tr>
<tr>
<td>• Teaching flexibility and effectiveness</td>
</tr>
<tr>
<td>• Provide additional information via hyperlinks</td>
</tr>
<tr>
<td>• Temporal freedom (revisiting the same field sites)</td>
</tr>
<tr>
<td>• Geographic freedom at the global scale</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Concerns for students</td>
</tr>
<tr>
<td>• Concerns for technology</td>
</tr>
<tr>
<td>• Concerns for development and network access costs</td>
</tr>
<tr>
<td>• Students may experience difficulty in navigating the system</td>
</tr>
<tr>
<td>• May not be in complete alignment with course goals and objectives</td>
</tr>
<tr>
<td>• Address general interests of a large, diverse audience</td>
</tr>
<tr>
<td>• Websites may change over time</td>
</tr>
<tr>
<td>• Websites may vanish over time</td>
</tr>
<tr>
<td>• Students are not physically at the field sites</td>
</tr>
<tr>
<td>• Students are unable to use all five senses (reduced total sensory learning opportunities)</td>
</tr>
<tr>
<td>• Students may not collect original data from actual field sites</td>
</tr>
<tr>
<td>• Should not fully replace actual field trips</td>
</tr>
<tr>
<td>• Simplifications of complex, natural environments</td>
</tr>
</tbody>
</table>
when actual field trips are inaccessible or impossible. Virtual field trips can remove time, space, political, and geographical location barriers. Such trips would allow students to explore remote, inaccessible, environmentally sensitive, and potentially hazardous areas at their own time and pace (Tuthill and Klemm, 2002). Nevertheless, VFT cannot offer students the total sensory and experimental learning compared to actual field trips (Tuthill and Klemm, 2002).

In summary, VFT should not completely replace actual science field trips (Arrowsmith et al., 2005). If field trips to certain ideal sites are inaccessible or impossible due to a variety of reasons, then VFT would provide an effective alternative teaching tool for college science instructors. These instructors can still incorporate investigative (visual and kinesthetic) learning that promotes students’ teamwork, critical thinking, creative thinking, and problem-solving skills.

**Literature Cited**


MATH ANXIETY AND THE “MATH GAP”:
HOW ATTITUDES TOWARD MATHEMATICS
DISADVANTAGES STUDENTS AS EARLY AS PRESCHOOL

DR. EUGENE GEIST
Ohio University

This study was conducted to examine the attitudes of Head Start teach-
ers toward mathematics and how it may influence how and what they
教 in the classroom. In general, the findings of this study can be
summarized as this:

1) Math anxiety affects how teachers assess their ability at mathemat-
ics. The more math anxiety they report, the lower they rate their ability
at mathematics.

2) The more mathematics a teacher feels that they know the more con-
fident they are in their ability at mathematics and the better they like
mathematics.

3) The more confident they are in their mathematic ability, the more
important they feel mathematics is in the preschool classroom.

4) If a teacher is confident that they know enough mathematics to teach
preschoolers, they plan to teach mathematics in their classroom more.

5) The more confident a teacher is in their ability at mathematics and
that they know enough mathematics content, the more likely they are
to use developmentally appropriate methods of teaching mathematics
in the classroom.

The findings from this present study suggest two future actions to en-
hance the mathematics outcomes for Head Start children and their fu-
ture ability and enjoyment of mathematics. First, in-service trainings
for Head Start teachers need to add a focus on the teachers’ confidence
in mathematics. A second suggest is that teachers be encouraged and
trained on reflective techniques so that they can reflect upon their own
feelings toward mathematics and its effects that it has on their curric-
ular decisions.
Math Anxiety and the “Math Gap” / 329

Introduction

Achievement in the STEM (Science, Technology, Engineering and Mathematics) disciplines is receiving a great deal of attention in research, politics and education recently (Latterell, 2005; NAEYC, 2004; National Council for Teachers of Mathematics, 2006; Sarama & Clements, 2004). There is a general consensus on the importance of the STEM disciplines to a person’s future employment possibilities, higher education potential and for improving our national economy. According to the National Research Councils report *Adding It Up* (Kilpatrick, Swafford, & Findell, 2001):

... Today’s students ... will face new demands for mathematical proficiency that school mathematics should attempt to anticipate. Moreover, mathematics is a realm no longer restricted to a select few. All young Americans must learn to think mathematically, and they must think mathematically to learn (p.1).

Other emerging research is demonstrating that early experiences and education both at home and at school greatly impact on later achievement (Duncan, Ludwig, & Magnuson, 2007; Hoekstra, Brekelmans, Beijaard, & Korthagen, 2009). The experiences of children even before they enter Kindergarten can effect their achievement in mathematics (Roberts, Vukovic, & Society for Research on, Educational Effectiveness, 2011).

Head Start programs were designed to give children from lower socioeconomic status families a more stimulating early childhood environment, which they were likely not receiving in the home environment (Ludwig & Phillips, 2007). The general aim was provide stimulating preschool experiences to allow for children from ages 3-5 to enter Kindergarten on a more equal footing to their more economically advantaged peers (Ludwig & Phillips, 2007). However, with regards to mathematics achievement, attitudes towards mathematics can have a huge impact on their ability to offer stimulating environments that can help children to succeed in mathematics (Sloan, 2010).

In this current study, 31 head start teachers were surveyed about their attitudes toward mathematics and their classroom practices to see how their attitude toward mathematics effected their decisions to teach mathematics to their students.

Beginnings of Math Anxiety

Math anxiety begins early and it caused by a number of intertwining influences (Lyons & Beilock, 2012a; Mattarella-Micke, Mateo, Kozak, Foster, & Beilock, 2011). Wu, Barth, Amin, Malcarne, & Menon (2012) demonstrated that math anxiety in primary grade children was not only present as early as 2nd grade, but that it had a marked detrimental effect on the subjects achievement in mathematics. Additionally, the study showed that math anxiety has a more pronounced effect on tasks that require complex verbal reasoning and problem solving rather than numerical operations that require basic fact retrieval. Krinzinger, Kaufmann, & Willmes (2009) also found a close relationship between math anxiety and math ability in 1st through 3rd graders and postulated that this is the time when Math anxiety seems to first occur.

Maloney & Beilock(2012) put the problem very clearly when they stated:

Not only is math anxiety present at the beginning of formal schooling, which is much younger than was previously assumed, but its development is also probably tied to both social factors (e.g. a teacher’s anxiety about her own math ability) and a student’s own basic numerical and spatial competencies – where deficiencies may predispose students to pick up on negative environmental cues about math.
If these Head Start teachers are, as the parents seem to be, math anxious and less comfortable with mathematics, this could affect their students’ achievement. It can also affect teachers’ classroom planning and amount of mathematics content that they include in their curriculum (Maloney & Beilock 2012). Parents and teachers may have developed mathematics anxiety because of previous failure in mathematics and negative experiences (Uusimaki & Nason, 2004). Parents and teachers can pass on their feelings about mathematics to their children and students. Higher level of math anxiety and lower levels of mathematical ability will result in less mathematics in the classroom (Sloan, 2010).

If math anxiety can be identified as early as 1st grade, this suggests that experiences before formal schooling can have an effect on the development of math anxiety. With children who come from less advantaged homes, such as those students who are eligible for Head Start, this relationship can take on an additional dimension.

The Influence of Teachers’ Math Anxiety

Lyons & Beilock (2012b) found that math anxiety is a very real phenomenon with wide ranging consequences. They found that math anxious people had the same reaction to the anticipation to doing mathematics as they did to the anticipation of a concrete, visceral sensation such as pain. Interestingly, this relation was not seen while actually doing math problems, but rather just in the anticipation of doing mathematics suggesting that it is not the math itself that hurts but rather, the anticipation of the math that caused the reaction. Since we tend to avoid pain, it is likely that math anxious individuals will work very hard to avoid mathematics.

Peker & Ertekin, (2011) found that there was a link between math anxiety and anxiety about teaching mathematics. Teachers who were afraid of doing mathematics were more likely to be afraid of teaching mathematics. This could lead to an avoidance of math in the planning process, especially at the younger ages.

It can also lead to behaviors in the teacher that can be detrimental to the mathematics achievement in students. Jackson & Leffingwell (1999) investigated the types of instructor behavior that created or exacerbated mathematics anxiety in students. It also tried to find the grade level at which mathematics anxiety first occurred in these students. The most significant finding was that teacher behavior was a prime determinant of math anxiety and that it is usually evident early in the primary grades.

Teachers who do not feel comfortable with mathematics or who have math anxiety may be less likely to incorporate math into their daily plans. According to Sloan (2010), teachers who report a dislike of mathematics spend 50 percent less time teaching the and teachers with negative attitudes toward mathematics frequently rely more on teaching skills and facts while neglecting cognitive thought processes and mathematical reasoning which in-turn fosters feelings of anxiety in students. In the discussion of the research study, Sloan (2010) writes:

The analysis of data revealed a number of antecedents of math anxiety, including parental influences, negative school experiences, methodology, low math achievement, test anxiety, lack of confidence, negative attitudes, mathematics avoidance, and mathematics background. Thus, as a preventative measure, another implication is that in-service, as well as pre-service, teachers should receive training regarding the causes of math anxiety.

Math anxiety also seems to be especially prevalent among early childhood teachers. Research suggests that many pre-service
teachers of young children report higher levels of math anxiety than those in other college majors. This leads to their poor academic performance in mathematics as well as to their effectiveness in teaching mathematics in their early childhood classrooms (Bush, 1989; Mahigir & Karimi, 2012; Maloney & Beilock, 2012; Peker & Ertekin, 2011; Roberts, Vukovic, & Society for Research on, Educational Effectiveness, 2011).

So why do so many teachers develop math anxiety and why does it seem to be so prevalent in early childhood teachers? Part of the answer has to do with socioeconomic backgrounds. As has been indicated earlier, parental influences tend to have a large impact on achievement in mathematics and the development of math anxiety (Arnold, Fisher, Doctoroff, & Dobbs, 2002; Barbarin et al., 2006). Parents and teachers from lower socio-economic statuses tend to have more negative attitudes toward mathematics or lower educational attainment (Mahigir & Karimi, 2012).

Many Head Start teachers tend to have lower educational attainment and they tend to be from lower socioeconomic backgrounds (Kim, Chang, & Kim, 2011; Ludwig & Phillips, 2007). This makes it much more likely that they will be more susceptible to math anxiety and be less apt to provide a stimulating mathematical environment for their young students.

The other part of the answer has to do with gender. Over 90% of early childhood and elementary teachers are female and for a number of reasons, math anxiety is more prevalent among females (Beilock, Gunderson, Ramirez, & Levine, 2010). In many classrooms, the classroom climate, learning style, instructional style, and experiences offered to students tend to favor the way that boys learn mathematics (Geist & King, 2008). Devine, Fawcett, Szucs, & Dowker (2012) found that middle school and high school girls showed higher levels of math anxiety than. As well as potentially having a detrimental effect on mathematics performance, the research study reported that high levels of math anxiety could have negative consequences for later mathematics education. The study also suggested evidence that math anxiety develops during the primary school years as was reported in studies previously cited in this review (Krinzinger, Kaufmann, & Willmes, 2009; Wu, Barth, Amin, Malcarne, & Menon, 2012). Furthermore, their study showed no gender difference in mathematics performance, despite girls reporting higher levels of math anxiety suggesting that girls may have had the potential to perform better than boys in mathematics however their performance may have been attenuated by their higher levels of math anxiety.

Beilock, Gunderson Ramirez & Levine (2010) studied female elementary school teachers to see what the effect of their level of math anxiety would be on their students, especially the female students. They suggest that math-anxious female elementary school teachers negatively effect the math achievement of their female students. At the beginning of the school year, there was no relation between a teacher’s math anxiety and her students’ math achievement but by the school year’s end, the more anxious teachers were about math, the more likely girls (but not boys) were to endorse the commonly held stereotype that “boys are good at math, and girls are good at reading” and the lower these girls’ math achievement. Also, girls who endorsed this stereotype had significantly worse math achievement than girls who did not and than boys overall. In early elementary school, where the teachers are almost all female, teachers’ math anxiety carries consequences for girls’ math achievement by influencing girls’ beliefs about who is good at math.

These studies in this review indicate that students from low SES backgrounds are more
at risk for lower achievement in mathematics, math anxiety starts early in life for a child, and that their attitudes toward mathematics can be influenced by the adults around them. The current study focuses on female Head Start teachers who teach children from low socioeconomic backgrounds. Survey questions asked them to rate their personal attitude about mathematics and other aspects of teaching mathematics to young children in order to examine how their comfort level with mathematics effects their beliefs and practices in planning mathematics for young children.

**Research Questions**

This study was conducted to examine the attitudes of Head Start teachers toward mathematics and how it may influence how and what they teach in the classroom. The following foreshadowed questions were proposed:

1. Does a teacher’s attitude toward mathematics effect decisions about curricular planning with regards to mathematics in the Head Start preschool classroom?
2. Does a teacher’s attitude toward mathematics change the way that teachers approach mathematics in the Head Start preschool classroom?
3. Does the teacher’s assessment of their own level of proficiency with mathematics effect decisions about curricular planning with regards to mathematics in the Head Start preschool classroom?
4. Do the teachers’ assessment of their own level of proficiency with mathematics change the way that teachers approach mathematics in the classroom?

**Materials and Methods**

31 Head Start teachers from a rural Appalachian region of the United States were surveyed. The sample was 100% female, 100% Caucasian and ages ranged from 25 to 57. The teachers were administered an open ended survey at the beginning of an in-service training meeting about their comfort level with mathematics and about how they teach math in their classroom. The questionnaire consisted of 9 questions. The questions asked were:

1. How do you feel when doing a math problem?
2. What do you like about math? What do you dislike?
3. What do you need to know about math to teach young children?
4. Do you like mathematics? Why or why not?
5. Why do you think math is important to learn in preschool?
6. Tell me how you think about math when planning activities for children.
7. Tell me how you would teach math to a preschool child?
8. What is important to remember when teaching math to young children?
9. Is it important for preschool children to learn math skills? Why?

Questions 1-4 were designed to gauge the teachers’ attitudes toward mathematics, questions 5 and 6 were designed to gauge the teachers’ beliefs about the importance of teaching mathematics in the preschool classroom and questions 7-9 were designed to investigate teachers’ beliefs about how mathematics is taught in the classroom. The results of the surveys were then coded and analyzed using a grounded theory approach to qualitative research (Glaser & Strauss, 1967).
Results and Discussion

The findings of this study seem to support findings from other studies that indicate that math anxiety and negative attitudes toward mathematics in teachers are related to each other and also have an effect on the children they teach. In particular, the findings of this study suggest that these feelings effect their curricular planning choices as well as their ability to teach mathematics to young children. Similar to the findings of Peker & Ertekin, (2011), the this study’s findings suggest that math anxiety and a negative self assessments of mathematical ability effects the choices a teacher makes about teaching mathematics in the classroom. It also supports the findings of Beilock, Gunderson Ramirez & Levine (2010) that math anxiety is not only an impediment to math achievement for the individual suffering from math anxiety, but to the the children that they teach and Jackson & Leffingwell’s (1999) finding that instructor behaviors in the classroom could exacerbated mathematics anxiety in students or effect the students mathematics achievement outcomes.

However more significantly, this study suggests that it is not just math anxiety that impacts the students of affected teachers, but also a teacher’s self-assessment of their ability at mathematics and their confidence in how much math they know. These factors don’t just effect children’s level of anxiety toward mathematics as was shown in Beilock, Gunderson Ramirez & Levine (2010) and Jackson & Leffingwell (1999), but it effects the decisions teachers make about how they teach math in the preschool classroom and how often. In general, the findings of this study can be summarized as this:

1. Math anxiety affects how teachers assess their ability at mathematics. The more math anxiety they report, the lower they rate their ability at mathematics.

2. The more mathematics a teacher feels that they know the more confident they are in their ability at mathematics and the better they like mathematics.

3. The more confident they are in their mathematic ability, the more important they feel mathematics is in the preschool classroom.

4. If a teacher is confident that they know enough mathematics to teach preschoolers, they plan to teach mathematics in their classroom more.

5. The more confident a teacher is in their ability at mathematics and that they know enough mathematics content, the more likely they are to use developmentally appropriate methods of teaching mathematics in the classroom.

In these findings, one theme that repeats is confidence. These findings did not address examine how much mathematics education a teacher had in their education or their achievement in those classes. A suggestion for further research may examine a teachers’ mathematics education background to see if that has an effect on their choices regarding teaching mathematics to preschool children. Tooke & Lindstrom (1998), Harper & Daane (1998), Godbey (1997) all found that most pre-service teachers come to their college mathematics methods classes with high levels of math anxiety. Methods classes seemed to mitigate these anxieties at least short term, but our goal as teachers should be to find ways not to pass on our math anxiety to our students in the first place. This study does suggest that a feeling of confidence in mathematics can make a difference in their curricular choices when teaching Head Start students.
Conclusions

The findings from this present study suggest two future actions to enhance the mathematics outcomes for Head Start children and their future ability and enjoyment of mathematics. First, in-service trainings for Head Start teachers need to add a focus on the teachers’ confidence in mathematics. Most in-service trainings tend to focus on curricular methodologies and classroom practice. These foci are also vitally important to develop a teacher’s knowledge base about appropriate methods of teaching mathematics to young children. However, the findings reported here suggest that activities that are specifically designed to make a teacher more comfortable with their ability at mathematics and also to increase their confidence in their mathematics ability will also have a beneficial impact. Head Start teachers, who do not feel confident in their ability or feel that they do not know enough mathematics to teach it to preschoolers, also tend not to plan for mathematics in their classroom. Additionally, when they do, they see math as a “skill” to be taught.

A combination of increasing mathematical confidence though subject matter training and training on developmentally appropriate mathematics practices, Head Start teachers may lead to better outcomes for children than simply curricular training alone. An avenue for future research on this topic is a MANOVA study of the interaction of the two independent variables (curricular training and content knowledge training) on the dependent variable of students’ mathematics achievement in kindergarten.

A second suggest is that teachers be encouraged and trained on reflective techniques so that they can reflect upon their own feelings toward mathematics and its effects that it has on their curricular decisions. A reflective process can help teachers to recognize their strengths and weaknesses and how it affects the children in their classrooms.

Many early childhood teachers feel uncomfortable teaching mathematics because they did not and do not like mathematics. Many also feel that they are not good at mathematics and therefore feel uncomfortable teaching it to their students. Math anxiety is a well-researched topic (Altermatt & Kim, 2004; Burns, 1998; Levine, Suriyakham, Rowe, Huttenlocher, & Gunderson, 2010; Stuart, 2000) and current practices tend perpetuate the problem. Many teachers who have math anxiety themselves inadvertently pass it on to their students. Through a reflective process and targeted in-service training, these obstacles can be overcome to improve long-term mathematics outcomes for children.
References


Introduction

Attrition rates of special education (SpEd) teachers in the United States have historically been high. Plash and Piotrowski (2006) wrote that attrition rates among SpEd teachers were 13% annually. The 2013 listing of teacher shortages published by the United States Department of Education evidenced that since 1990, SpEd has been identified as a critical shortage area in the state of Alabama and in most other states as well. High attrition rates of SpEd teachers make it difficult to provide qualified teachers to teach special needs students. Many school systems are forced to hire “out of field” in order to fill SpEd teacher positions.

Mitchell and Arnold (2004) wrote that SpEd teachers leave the classroom at approximately twice the rate of their general education (GenEd) colleagues. Hale-Jinks, Knopf, and Kemple (2006) conducted a literature review and found that high levels of job stress have been linked to decreased job satisfaction and job turnover among teachers.

Retaining qualified SpEd teachers in the Nation’s schools has been an established problem for decades. Particularly problematic is the fact that SpEd teachers are increasingly reporting perceptions of burnout. The MetLife Survey of the American Teacher, released in 2014 included the statement that 51% of teachers surveyed reported feeling under a great deal of stress several days a week.

THE IMPLICATIONS OF DEMOGRAPHIC VARIABLES AS RELATED TO BURNOUT AMONG A SAMPLE OF SPECIAL EDUCATION TEACHERS

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The attrition rate of highly qualified special education teachers is a pervasive problem in the United States. This study investigated the association between the burnout subscales of emotional exhaustion, depersonalization, and personal accomplishment relative to 10 demographic variables. Sixty-five special education teachers constituted the study sample. The study relied on data obtained from the Maslach Burnout Inventory-Educators Survey and a demographic questionnaire. The mean reliability coefficient (Cronbach’s $a$) for the subscales comprising the instrument was found to be $a = .81$. Results were analyzed descriptively (frequencies and percentages). Gender and Marital status were also analyzed inferentially using the $t$-test. Descriptive findings suggested an association between all of the demographic variables and burnout. However, inferential analysis of gender and marital status related to the three subscales indicated that the differences were not statistically significant. Findings resulted in practice and policy recommendations for special education teachers and educational leaders.
Background

The Job of the Special Education Teacher

As in other helping professions, the SpEd teacher has hourly contact with special needs students. According to the National Center for Education Statistics, more than 6.5 million children and students with disabilities are currently receiving educational and other support services in federally supported programs nationwide. The majority of those individuals are served by public schools.

Although GenEd teachers have various duties associated with their jobs, the SpEd teacher has many more additional duties and responsibilities. In addition to teaching in some type of setting, the SpEd teacher is assigned a caseload. Caseload is generally defined as the number of special needs student files the teacher is responsible for. In other words, the number of Individualized Education Programs (IEP's) the teacher is responsible for writing, maintaining, and implementing. Due to Federal and State mandates and additional paperwork required at the local level, the amount of paperwork a SpEd teacher is tasked with is daunting.

The SpEd teacher must complete all reevaluations, functional behavioral assessments, behavior intervention plans, and IEPs on a computer program. That workload is doubled, because in spite of the argument that technology has streamlined the process, the SpEd teacher must maintain a hardcopy file of the IEP and all supporting documents. Each piece of paper in the student file must be placed in a specific order. The hardcopy files are subject to administrator, school system, or State Department of Education scrutiny at any time. Additionally, the electronic paperwork is subject to scrutiny by the school SpEd department chair, resource consultant, the Special Services Coordinator, and the State Department of Education. Most SpEd teachers agree that the volume and standards for the paperwork are at best, unreasonable, and at times ludicrous. It is common for paperwork to be redundant or unnecessary.

The SpEd teacher is responsible for conducting all meetings pertaining to implementing the IEP and maintaining student files in the manner prescribed by the local school system and State and Federal guidelines. The special educator is charged with teaching the GenEd curriculum to SpEd students in a variety of settings. More often than not, the students have a variety of disabilities. The SpEd teacher has to teach or assist in teaching every subject that a student could possibly take with the expectation that the special needs students will perform on standardized tests at the same proficiency level as their GenEd peers.

Special education teachers are also expected to stay abreast of and become proficient in many of the technology-related areas that GenEd teachers are responsible for. The SpEd teachers make the GenEd teachers aware of students’ accommodations that are contained in the IEPs and advise the GenEd teachers of strategies and methods for working with special needs students. SpEd teachers are responsible for observing the same laws that GenEd teachers must observe as well as the additional burden of copious State and Federal laws pertaining to the many facets of SpEd. Special education teachers are subjected to additional meetings, workshops, and professional development in order to stay abreast of continually changing and increasing paperwork, SpEd laws, and litigation potentialities. Because of the legalities surrounding working with special needs students and the laws governing the delivery of services, SpEd teachers are at greater risk for reprimand, due process proceedings, or lawsuits. Taken collectively, these additional burdens and liability potentialities place additional stress on SpEd teachers.

The special educator liaises with a wide variety of individuals to facilitate students’ academic and general welfare: GenEd teachers,
parents, administrators, counselors, social workers, vocational school personnel, school nurses, probation officers, mental health personnel, and other individuals as needed. Special education teachers must monitor student academic and behavioral progress in all subjects and locations. As with GenEd teachers, SpEd teachers are increasingly feeling loss of control over curriculum, instruction, and assessment decisions. Often, the loss of teacher units and ensuing lack of job security, coupled with declining salaries add to teacher stress. Many teachers experience additional strain, as they must work second jobs in order to make ends meet.

**Burnout**

The modern moniker for severe job-related stress, “burnout,” was first coined by Herbert Freudenberger in 1974. Since that time, theorists have offered varying descriptions as to what constitutes burnout. Perhaps the most widely recognized operational definition for burnout comes from the work of Maslach and Jackson: “Burnout is a syndrome of emotional exhaustion, depersonalization, and personal accomplishment that can occur among individuals who do ‘people work’ of some kind” (2003, p. 2).

Maslach and Jackson (1981) perceived burnout as having three components. Emotional exhaustion (EE) is characterized by physical deterioration, emotional overburden, and lack of energy and enthusiasm. Maslach observed that exhaustion was the first reaction to the stress of job demands or a major life-change. Maslach and Jackson wrote that an individual might experience EE when overextended and overwhelmed by the demands of others. Exhausted individuals usually engage in behaviors meant to create mental and emotional distance between themselves and others at work and elsewhere (Maslach & Jackson, 1981).

Maslach (2003) purported that depersonalization (DP) is the second dimension of burnout. Negative attitudes toward work and cold, distant attitudes about other people are the primary characteristics of DP. Depersonalization refers to the dehumanization of others and conscious effort to detach and distance oneself from others (Maslach, 2003). According to Maslach and Leiter, “Depersonalization has dire effects on a person’s well-being and can negatively affect work effectiveness,” (1997, p. 19).

Maslach (2003) observed that depersonalized individuals were cynical, pessimistic, and generally saw the worst in people or situations. Another negative aspect of DP is that people become callous and unfeeling. Individuals become intensely negative toward others and may barely contain their disdain (Maslach & Jackson, 1986). They add that individuals who experience DP might develop a sense of guilt about work performance, feelings toward others, or treatment of others.

According to Maslach, “The personal accomplishment component represents the self-evaluation dimension of burnout” (1998, p. 69). Maslach described the dimension of reduced personal accomplishment (PA) as the loss of feeling qualified and successful that was characterized by feeling ineffective and hopeless. Employees experiencing reduced PA perceive little if any satisfaction regarding their job outcomes and may become negative when evaluating themselves or others (Maslach & Jackson, 1985). Those experiencing burnout may display attitudes of cynicism and negativity about themselves and their job performance. They may intuit and fear becoming a person with whom others do not want to be associated (Maslach, 1982).

Unfortunately, the effects of burnout are not limited to the workplace and may manifest themselves in a person’s personal life. People may become negative, short-tempered, pessimistic, and critical of family members. The
burnt-out family member may be too exhausted or disinterested to engage family members meaningfully (Maslach, 2003).

There are also negative implications regarding emotional and physical health for the burnt-out individual. Maslach and Jackson (1981) identified a number of negative physical symptoms and behaviors associated with burnout such as diminished physical and psychological health. Psychologically, the burnt-out individual may experience a loss of self-esteem, depression, neuroticism, or other psychological disorders. Persons experiencing burnout frequently abuse alcohol, prescription and non-prescription drugs, and engage in risk-taking behaviors in order to cope (Maslach, Schaufeli, & Leiter, 2001). Some of the more common physical symptoms associated with burnout are: (a) feeling exhausted, tired, tense, or run-down, (b) feeling up-tight or unable to relax or sleep, (c) getting sick easier or more often, and (d) developing ulcers or other gastrointestinal illnesses (Maslach, 2003, pp. 123-124).

**Purpose of the Study**

The focus of this research was to explore Special Education teacher emotional exhaustion, depersonalization and personal accomplishment as related to 10 demographic variables. The research questions specific to the study are:

1. Do SpEd teachers’ perceptions of burnout differ substantially with respect to gender?
2. Do SpEd teachers’ perceptions of burnout differ substantially with respect to age?
3. Do SpEd teachers’ perceptions of burnout differ substantially with respect to marital status?
4. Do SpEd teachers’ perceptions of burnout differ substantially with respect to degree attainment?
5. Do SpEd teachers’ perceptions of burnout differ substantially with respect to years of teaching experience?
6. Do SpEd teachers’ perceptions of burnout differ substantially with respect to caseload number?
7. Do SpEd teachers’ perceptions of burnout differ substantially with respect to grade level taught?
8. Do SpEd teachers’ perceptions of burnout differ substantially with respect to the number of students taught daily?
9. Do SpEd teachers’ perceptions of burnout differ substantially with respect to the number of additional hours spent completing paperwork?
10. Do SpEd teachers’ perceptions of burnout differ substantially with respect to teaching assignment?

**Research Method and Procedure**

**Survey Instrument**

The third edition of the Maslach Burnout Inventory—Educators Survey was used in this study (Maslach, Jackson, & Leiter, 1996). The instrument consists of three separate subscales to measure burnout (EE, DP, PA). The MBI-ES is a 7-point, Likert-type, self-report, survey. The survey consists of 22 statements concerning perceptions related to work. The response options range from 0 (Never) to 6 (Everyday).

The instrument has established categories for measuring intensity in each subscale. The range of scores within the EE subscale consist of 0-16 (low), 17-26 (moderate), and ≥ 27 (high). Within the DP subscale the ranges are: 0-6 (low), 7-12 (moderate), and ≥ 13 (high). The range of scores within the PA subscale consists of ≥ 39 (low), 32-38 (moderate), and 0-31 (high). It is important to note that high burnout is reflected by high scores on the EE and DP subscales coupled with a low score on the PA subscale and vice versa.
However, the MBI-ES provides no overall (total) burnout score. Maslach and Jackson (1986), the original instrument developers, found the internal consistency for each MBI-ES subscale as follows: EE ($\alpha = .90$), DP ($\alpha = .79$), and PA ($\alpha = .71$). A manual and scoring guide come with the instrument.

**Demographic Questionnaire**

A demographic questionnaire of 10, forced-choice items was created by the researcher and included in the survey packet. The demographic questionnaire requested information pertaining to the following demographic variables: gender, age, marital status, degree attainment, years teaching experience, case load number, grade level taught, number of students taught daily, additional hours completing paperwork, and teaching assignment.

**Population and Sample**

The study population consisted of 215 SpEd teachers employed by an Alabama public school system. Approximately 30,000 students are served by the school system. The total sample was comprised of 65 SpEd teachers.

**Reliability Coefficients for Measures**

Cronbach’s alpha ($\alpha$) is used to measure how well a set of questions, or factors, measure a particular construct in a given instrument (Sijtsma, 2009). Analysis of participants’ responses for this study resulted in returned reliability coefficients of: EE ($\alpha = .86$), DP ($\alpha = .80$), and PA ($\alpha = .78$).

**Data Collection**

All pertinent forms of permission were obtained to conduct research. The survey packet was first administered to a focus group ($n = 5$) to determine the level of user-friendliness. The average time to complete the survey packet was twenty minutes. Afterward, 215 elementary, middle, and high school SpEd teachers were invited to participate in the mailed, self-report survey. Participation was on a voluntary basis. Survey packets were collected for a three-week period. At the end of the data collection period, 60 usable surveys were obtained. Including the five focus group surveys, the final sample was $N = 65$.

**Data Analysis**

Direct data entry was the data entry method used. A coding schema was used while transferring data obtained from the MBI-ES and demographic questionnaires to Microsoft Excel® worksheets. Descriptive statistics were performed using Microsoft Statistical Analysis Toolpak®. Frequencies and percentages were computed for each of the 10 demographic variables in relation to the sub-scale raw scores for the three intensity levels (low, moderate, high) of each MBI-ES subscale (EE, DP, PA). The survey data were copied from the Excel® worksheets to SPSS® worksheets. $t$-tests and Cronbach’s alpha testing were accomplished using SPSS Statistics Desktop V21.0.0®. The $t$-test was performed to determine if there was a statistically significant difference between males and females and married and unmarried participants relative to EE, DP, and PA. An alpha level of .05 was set for statistical analysis.

**Results**

**Research Question 1:**

Descriptive analysis suggests that in this study, females (49%) were more prone to high EE than males (33%). A greater percentage of males (33%) indicated high DP as compared to females (12%). In the female subgroup, 76% indicated low DP levels. Both males and females reported similar numbers with regard to positive perceptions of workplace PA.

Table 1 contains $t$-test results that indicate that there was no statistically significant difference between females and males pertaining
to perceptions of EE \( t(63) = .255, p = .800 \) or perceived DP \( t(63) = -1.856, p = .068 \). As well, no statistically significant difference was found regarding gender and PA \( t(63) = .650, p = .518 \).

**Table 1. T-test Results: Gender Related to Emotional Exhaustion (EE), Depersonalization (DP), and Personal Accomplishment (PA).**

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<th>df</th>
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*Note. Significance level: *p < .05, two-tailed. **p < .01, two-tailed*

**Research Question 2:**

The 21-31 year old age group reported the greatest percentage of low EE (57%) whereas the 42-51 year old age group reported the greatest percentage of high EE (59%) as well as the greatest percentage of high DP (23%). These numbers indicate that the 42-51 year old group is experiencing the most work-related stress. The 52-61 year old group reported the greatest percentage of low DP (91%). Considering that the 21-31 year old group scored the second greatest percentage of low DP (86%), it would stand to reason that, among this sample, the group aged 21-31 is experiencing the lowest perceived burnout.

**Research Question 3:**

Married respondents reported the greatest percentage experiencing high EE (50%) and the greatest percentage experiencing low DP (75%). Fifty-eight percent of the married cohort also indicated a greater percentage of respondents who felt a strong sense of PA as opposed to 46% of the unmarried cohort. Unmarried respondents reported the greatest percentage of low EE (24%) coupled with the greatest percentage of high DP (24%). Of the two groups, married respondents reported the greatest percentage of individuals feeling a strong sense of PA.

Results of the \( t \)-test analysis shown in Table 2 imply that there was no statistically significant difference among the sample regarding marital status and perceptions of EE \( t(63) = .721, p = .474 \). As well, no statistically significant difference was calculated for the DP subscale \( t(63) = .863, p = .391 \). Similarly, no statistically significant difference was found regarding marital status related to PA among the participants in the study \( t(63) = 1.177, p = .244 \).

**Table 2. T-test Results: Marital Status Related to Emotional Exhaustion (EE), Depersonalization (DP), and Personal Accomplishment (PA).**

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*Note. Significance level: *p < .05, two-tailed. **p < .01, two-tailed*

**Research Question 4:**

The percentage of high EE was greater among the group of teachers that reported having Specialist degrees (75%). However, that group had the greatest percentage of participants experiencing low DP (100%). The group of participants that reported holding Master’s degrees indicated that they had the
Research Question 5:
Results revealed that teachers reporting ≥ 22 years teaching experience were feeling the greatest amount of high EE (50%). Teachers with 5-10 years of experience reported the greatest percentage of low EE (36%). Teachers reporting 1-4 years teaching experience indicated 100% low DP while those with 5-10 years teaching experience reported the largest percentage for high DP (23%). Again, where number of years teaching experience was the variable under consideration, scores indicated that all groups of teaching experience, in general, were experiencing positive perceptions of PA.

Research Question 6:
Teachers who were responsible for 11-15 case files were found to have the greatest number with low EE (33%). Teachers with a caseload of ≥ 26 indicated the greatest percentage of high EE (67%). In the area of DP, all categories pertaining to this demographic reported predominantly low scores, though participants holding 5-10 files indicated 27% with high DP scores. Overall, all participants, regardless of caseload size, indicated a high sense of PA, indicating that caseload number did not negatively effect perceptions of PA.

Research Question 7:
Participants teaching prekindergarten through third grade students reported the greatest percentage of low EE (50%) and low DP (90%), coupled with the highest percentage of perceived high PA (90%). This might indicate that of all grade levels taught, prekindergarten through third grade teachers were experiencing the lowest burnout. Participants who indicated teaching at the middle school level (grades 6-8) ranked highest for high EE (62%) and lowest in terms of perceived PA (34%). High school teachers (grades 9-12) reported the greatest percentage of high DP (22%).

Research Question 8:
Participants teaching 21-30 students daily indicated the greatest percentage of high EE (66%) and individuals indicating that they taught ≥ 31 students daily obtained the greatest percentage of high DP scores (25%). Respondents teaching 11-20 students daily indicated the greatest percentage of low DP (83%). Participants who reported teaching 1-10 students daily reported the greatest percentage of low EE (35%), second greatest percentage for low DP (70%), and 53% for a strong sense of PA. Viewed collectively, the analysis indicates that teaching 1-10 students daily is potentially the best number for burnout reduction. Scores indicated perceptions of high PA were found across all four categories.

Research Question 9:
Although the greatest percentage of high EE (46%) occurred among the group indicating 4-6 additional hours spent weekly completing paperwork, it is important to note that the second greatest EE percentage was computed from the group of teachers who reported spending an additional 7-10 hours weekly completing paperwork (62%). This is important because the 7-10 hour group also indicated the greatest number of respondents who were experiencing high DP (21%) as well as the greatest number experiencing feeling of low PA (31%). Teachers who spent only 1-3 additional hours weekly completing paperwork had the greatest number scoring low for EE (40%) and low for DP (84%). As well, this group had the second largest amount of individuals with high PA (68%). Viewed collectively, this suggests that increased paperwork equates to increased stress and conversely, less additional paperwork equates to less stress.
Research Question 10:

Participants indicating that they taught a combination of inclusion and resource reported the greatest percentage of high EE (57%). Teachers who reported teaching resource classes only indicated 100% of respondents experiencing low DP. The greatest percentage of high DP scores was found among teachers in inclusion-only settings (40%). Participants teaching a self-contained, multi-disabled class indicated having the greatest percentage of low EE (67%). This group also indicated the greatest percentage of low DP (67%), and the second greatest percentage for strong PA (67%). These results seem to indicate that the self-contained, multi-disabled setting is the least stressful working environment.

Conclusions and Recommendations

It is well-accepted that teaching is a stressful job for a variety of reasons. Unfortunately, little research has been devoted to the examination of burnout among SpEd teachers. The aim of this study was to examine the association of demographic variables and burnout. The following suggestions are offered as strategies for ameliorating burnout among SpEd teachers:

Males, a minority in the field, who tend toward DP, might benefit from creating supportive networks with each other. Females, found to be more prone to exhaustion, should engage in wellness programs and learn and practice strategies for reducing stress and the effects of stress. Older teachers and those approaching the latter stage of their careers were found to be more susceptible to burnout. Administrators should be aware of this and monitor this group more closely.

Single SpEd teachers were found to be more prone to burnout. A blog, or other type of social network might prove beneficial for the exchange of ideas and feelings among this cohort. Results suggest that teachers with a higher degree of educational attainment might tend toward burnout. Administrators should give these teachers options for stimulating challenges or other opportunities for advancement and recognition.

Findings indicated that the number of years teaching experience is positively correlated to burnout. That is to say, that as the number of years a teacher teaches increases, so too does stress. Administrators should be aware of this and watch for signs of stress among veteran teachers.

Caseload number was found to be positively associated with burnout. School system leaders should hire a sufficient number of SpEd teachers to ensure that SpEd students are receiving quality services and that the number of cases that a SpEd teacher is responsible for is manageable. Results of the study indicate that 15 or less is a manageable number of cases. Special education department chairs should make sure that there is an equitable distribution of cases among SpEd teachers in terms of number and difficulty (e.g., cases involving students with behavioral intervention plans, high-maintenance parents, or multi-disabled students).

Middle and high school teachers were found to be more prone to stress on the job. School leaders should be mindful of this and engage in job design practices that will identify areas of job-related stress for middle and high school teachers and seek to eliminate them.

Student to teacher ratio emerged as a predictor of job stress. Again, a school should be staffed adequately to keep the number of students taught daily by the SpEd staff to as low a number as possible. Results of the study suggest that the optimum number of students per teacher is 10.

A positive correlation between the number of additional hours a SpEd teacher spends completing paperwork and burnout was evident. Policymakers and educational leaders at all echelons should eliminate repetitive and
unnecessary forms of paperwork. Paperwork items deemed essential should be streamlined. Where computerized systems are in place, SpEd teachers should not be required to keep hardcopy records. Educational leaders at all levels need to understand the debilitating effect that excessive paperwork has on teachers and establish meaningful paperwork reduction measures that are not simply touted, but implemented, practiced, and enforced.

Often, one block, or period of the day is longer for middle and high schools. Administrators should schedule all SpEd teachers’ planning time during the longest planning period possible to provide additional time for paperwork completion and implementation of the IEP. If a “skinny” block exists, SpEd teachers should be allowed to use the additional time to complete paperwork or other duties pertaining to IEP implementation. Considering the negative effects of excessive paperwork, system-level leaders should hire a sufficient amount of psychologists and psychometrists to complete the initial evaluations and reevaluations.

Teachers teaching both inclusion and resource classes perceived higher levels of stress. Site leaders should confer with individual teachers and assign teachers to teaching assignments of their choice with regard to subject matter. Additionally, SpEd teachers working in an inclusion setting should be matched with a compatible GenEd teacher and both should be afforded meaningful professional development to ensure a more productive and satisfying professional relationship and academic result for students.

While the recommendations and practices provided herein should prove helpful in eliminating, or at least alleviating stress among SpEd teachers, in the end analysis, encouraging and helping each other may perhaps be the simplest practice in the affective domain that SpEd teachers and those who work closely with them can engage in to mitigate work-related stress and burnout.

References
Many instructors administer quizzes after covering small amounts of material to give students an indication of their proficiency before taking a more comprehensive exam. However, previous research on the effects of quizzing on exam performance has produced mixed results. For example, Tuckman (1996) found that students who completed quizzes performed significantly better on exams than students who did not complete quizzes. However, Grover, Becker, and Davis (1989) found no difference in performance between frequent (chapter-by-chapter) and infrequent (4-chapter units) testing, and Graham (1999) found that quizzing may only benefit mid-range students. Beaulieu and Frost (1989) found that frequent quizzing might actually have a detrimental effect on long-term exam performance. Furthermore, students often view frequent quizzing as a form of punishment (Graham 1999), and unannounced quizzes have been shown to increase test anxiety (Saigh 1984–1985).

An alternative way of using quizzes is to administer them before the instructor covers the material in lecture. The goal of this method is to use quizzes to promote learning, rather than just assessing it, by encouraging students to keep up with course readings. Student compliance with reading assignments has steadily declined over the years (Burchfield & Sappington 2000; Clump, Bauer, & Bradley 2004), and completion of assigned readings before a topic is covered in lecture has been shown to increase students’ understanding of the material and in-class participation (Ryan 2006). Relatively few studies have examined the effects of pre-lecture quizzes on exam performance; however, the findings thus far are promising. For example, Johnson and Kiviniemi (2009) found that completion of pre-lecture quizzes related to improved exam...
and overall course performance in a social psychology class. Furthermore, Narloch, Garbin, and Turnage (2006) found that students who received either matching or fill-in-the-blank pre-lecture quizzes, compared to no quiz, in a sensation and perception class performed better on both multiple-choice and essay exams. Students who completed pre-lecture quizzes also rated the lectures as clearer and better organized. Quizzes, in general, have also been found to help reduce test anxiety (Sporer, 2001).

The purpose of this study was to examine whether the benefits of pre-lecture quizzes extend to a statistics course. We were also interested in whether pre-lecture quizzes help reduce test anxiety. Some researchers suggest that periodic quizzes may produce a desensitizing effect for test-anxious students (e.g. Thorne 2000). Based on previous findings, we expected pre-lecture quizzes to relate to improved exam performance, increased student attendance, students’ feeling better prepared for exams, and lower levels of test anxiety.

**Method**

**Participants**

Students \((N = 70)\) from two sections of an introductory statistics course taught in the spring semester served as participants in this study. Participants were predominately female \((81\%)\); however, there was no significant difference in the number of men and women between each section, \(\chi^2(1, N = 70) = 0.18, p = .67\).

**Design**

The course included a lecture and a lab component. The first author taught the lectures for both sections in back-to-back sessions. Students in each section used the same textbook, completed the same homework assignments, and took the same exams. All assignments and exams related to material from the textbook and the lectures. The first author graded all quizzes, assignments, and exams using an answer-key. To remain as objective as possible in grading, partial credit was not awarded. Students met for lab immediately after lecture. A different doctoral-level teaching assistant instructed the lab for each section; however, the lab activities and material covered were the same for both sections. The only difference between the two sections was that students in one section \((n = 36)\) completed pre-lecture quizzes and students in the other section \((n = 34)\) did not. We determined this designation by a flip of a coin before the semester began.

**Pre-lecture Quizzes**

Pre-lecture quizzes consisted of five multiple-choice questions relating to the material that would be covered in that day’s lecture. Students were assigned a chapter from the textbook to read each week. The quiz questions were designed to assess whether students had completed and understood the assigned reading: “The regression line is also known as?”, “How is the \(t\) distribution different from the normal distribution?”, “Can we run post-hoc analyses with a non-significant ANOVA result?”, etc. Students were given 5 min to complete each quiz. The instructor reviewed the quiz immediately after all students turned in their completed quizzes. There were a total of 10 quizzes throughout the semester, graded on a scale of 0 – 100. The mean quiz score was 70.73 \((SD = 10.15)\), and the total quiz completion rate was 90%.

**Exams and Final Course Grade**

There were three noncumulative exams spread throughout the semester, each covering about a third of the course material. The exams included questions based on the assigned readings and lectures, and consisted of three general sections: (a) Short-answer questions \((15\%)\), (b) Computations \((70\%)\), and (c) Multiple-choice questions \((15\%)\).
Exams were weighted based on how well students performed, with the highest exam score counting for 30% of the course grade, the second highest counting for 25%, and the lowest exam score counting for 15%.

Students’ final course grade was based on their performance on the three exams (70%) and five homework assignments (20%). For students in the pre-lecture quizzes section, their performance on the quizzes contributed 10% toward the course grade. For students in the section that did not complete pre-lecture quizzes, participation contributed 10% toward the course grade.

Materials and Procedures

Immediately before each exam, students in both sections completed a brief questionnaire that asked them to indicate how many hours they spent studying for the exam. Students were also asked to rate how nervous they felt about the exam and how prepared they felt for the exam on a 7-point scale, with 1 being low on the scale and 7 being high. The questionnaire was completely anonymous and collected before the exams were distributed. At the end of the semester students in both sections rated, on a 7-point scale, how useful pre-lecture quizzes are in helping students keep up with course readings and preparing students for exams. They also indicated whether or not they recommend that instructors use pre-lecture quizzes in their courses.

Results

Effects of Pre-lecture Quizzes

Means, standard deviations, and effect sizes for all statistical comparisons are presented in Table 1. For Exam 1, there were no significant differences between students who completed pre-lecture quizzes and those who did not in regard to test anxiety, \( t(68) = 1.13, d = .27, p = .26 \), or how prepared they felt they were for the exam, \( t(68) = -1.24, d = .30, p = .22 \). There was also no significant difference in exam scores between the groups, \( t(68) = -1.05, d = .25, p = .30 \). For Exam 2, students who completed pre-lecture quizzes reported less test anxiety, \( t(68) = -3.03, d = .74, p < .01 \), and more preparedness, \( t(68) = 2.64, d = .63, p = .01 \), than those who did not complete pre-lecture quizzes. Students who completed pre-lecture quizzes also scored higher on the exam than students who did not complete pre-lecture quizzes, \( t(68) = -2.20, d = .52, p = .03 \). The same pattern was seen for Exam 3. Students who completed pre-lecture quizzes reported less test anxiety, \( t(63) = -2.24, d = .56, p = .03 \), and feeling more prepared, \( t(63) = 2.72, d = .66, p < .01 \). They also scored higher on the exam than students who did not complete pre-lecture quizzes, \( t(68) = -2.36, d = .56, p = .02 \).

Across all three exams, pre-lecture quizzes had an effect on reducing self-reported exam anxiety, \( t(63) = -2.16, d = .54, p = .04 \), and increasing self-reported exam preparedness, \( t(63) = 2.75, d = .67, p < .01 \). There was also a significant effect for pre-lecture quizzes on total exam grades (the non-weighted average of the three exams), \( t(68) = -2.98, d = .71, p < .01 \). However, there was no significant difference between students who completed pre-lecture quizzes and those who did not in regard to the reported number of hours studying for each exam, \( t(48) = 0.56, d = .16, p = .58 \), or how many lectures they missed during the semester, \( t(56) = -0.12, d = .03, p = .91 \).

Students’ Perceptions of Pre-lecture Quizzes

Students who completed pre-lecture quizzes were more likely than those who did not to believe that such quizzes help students keep up with class readings, \( t(63) = 3.36, d = .88, p < .01 \), and prepare students for exams, \( t(63) = 2.74, d = .68, p < .01 \). Students who completed pre-lecture quizzes were also more likely to recommend that instructors include them in their courses, \( t(63) = 3.82, d = .95, p < .01 \).
Discussion

Our data support the hypothesis that completing pre-lecture quizzes significantly increase students’ exam performance. Pre-lecture quizzes did not affect the number of hours students reported studying for exams or their class attendance. However, students who completed pre-lecture quizzes felt better prepared for, and less anxious about, exams and believed that pre-lecture quizzes helped them keep up with the course readings. Furthermore, consistent with previous research (e.g., Graham 1999; Landrum 2007), students who completed pre-lecture quizzes rated them favorably and recommended that instructors use them in their courses.

We must be cautious when evaluating the results of a single study based on a relatively small sample of students. However, completing pre-lecture quizzes appears to help students feel more prepared for exams and reduces test anxiety. Statistics is a subject notoriously associated with student anxiety (Pan & Tang 2005). Thus, pre-lecture quizzes may have the potential to create a positive and less-threatening learning environment.

Table 1. Means and Standard Deviations for Study Variables

<table>
<thead>
<tr>
<th></th>
<th>Exam I</th>
<th>Exam II</th>
<th>Exam III</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Quiz (M, SD)</td>
<td>No Quiz (M, SD)</td>
<td>Quiz (M, SD)</td>
<td>No Quiz (M, SD)</td>
</tr>
<tr>
<td>Feel prepared for exam</td>
<td>4.81 (1.41)</td>
<td>5.18 (1.06)</td>
<td>5.08 (1.02)</td>
<td>4.22 (1.64)</td>
</tr>
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<td></td>
<td>4.97 (1.33)</td>
<td>4.03 (1.45)</td>
<td>5.04 (0.79)</td>
<td>4.47 (0.90)</td>
</tr>
<tr>
<td>Feel nervous about exam</td>
<td>4.39 (1.81)</td>
<td>3.91 (1.71)</td>
<td>3.94 (1.45)</td>
<td>5.13 (1.76)</td>
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<td></td>
<td>4.12 (1.74)</td>
<td>5.13 (1.74)</td>
<td>4.16 (1.03)</td>
<td>4.71 (1.01)</td>
</tr>
<tr>
<td>Hours studied for exam</td>
<td>3.95 (2.85)</td>
<td>3.42 (2.26)</td>
<td>4.82 (4.47)</td>
<td>3.92 (2.57)</td>
</tr>
<tr>
<td></td>
<td>4.84 (5.50)</td>
<td>4.08 (2.19)</td>
<td>4.35 (2.76)</td>
<td>3.98 (1.86)</td>
</tr>
<tr>
<td>Exam grade</td>
<td>79.76 (8.63)</td>
<td>77.01 (12.92)</td>
<td>78.74 (6.94)</td>
<td>73.25 (13.18)</td>
</tr>
<tr>
<td></td>
<td>78.95 (10.43)</td>
<td>74.15 (10.43)</td>
<td>79.15 (10.43)</td>
<td>74.80 (7.20)</td>
</tr>
<tr>
<td>Missed classes</td>
<td>1.58 (1.52)</td>
<td>1.63 (1.64)</td>
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<tr>
<td>Help keep up with readings</td>
<td>4.9 (1.72)</td>
<td>3.25 (2.02)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Help prepare for exam</td>
<td>4.91 (1.70)</td>
<td>3.63 (2.06)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommend quizzes</td>
<td>5.06 (1.69)</td>
<td>3.34 (1.93)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
References


ACADEMIC PERFORMANCE OF STUDENTS WITHOUT DISABILITIES IN THE INCLUSIVE ENVIRONMENT

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This study examines the impact of inclusion on secondary students by focusing on the performance of students without disabilities in the inclusive environment compared to their performance in a segregated environment. Many studies exist demonstrating the positive impact of the inclusive environment on the performance of students with disabilities. However, there is little research demonstrating the impact of the inclusive environment on the performance of students without disabilities. This randomized control experiment showed that there was no significant difference in the performance of students without disabilities in the inclusive versus segregated environments in reading, science, and social studies content areas. Students without disabilities scored significantly higher in segregated environments versus inclusive environments in math. Further research examining the impact of the environment on the performance of students without disabilities is recommended.

Introduction

Researchers, advocates, and theorists agree that students with disabilities learn best in the inclusive environment alongside their peers (Idol, 2006; Kunc, 1992; Zaretzky, 2005). Provisions of the Individuals with Disabilities Education Act stipulate that students with disabilities must be educated in their least restrictive environment (P.L. 94-142, Section 1412 [5] [B]). As well, a team of individuals including parents, teachers, and administrators must agree to any deviation from that placement.

The inclusive environment is the environment in which students with disabilities and students without disabilities learn side-by-side in the same classroom. These classrooms offer appropriate supports provided free of charge to those who have been identified as having a disability in accordance with case law and the Individuals with Disabilities Education Act (P.L. 94-142, Section 1412 [5] [B]). This environment involves differentiated instruction, leveled activities, or even multiple professionals in the same classroom at a time. Thus, the experience of a student in an inclusive classroom is inherently different from a student in a segregated classroom.

Researchers such as Idol (2006) and Farell, Dyson, Polat, Hutcheson, and Gallanbaugh (2007) provided evidence that students with disabilities performed better in the inclusive environment than the segregated environment. According to Idol, standardized test scores generally increased or were unchanged.
after an inclusion policy was implemented. This is quite significant, as the students who were introduced to the classroom were students with disabilities, and generally had lower academic ability levels than the students they were joining in the inclusive classroom.

Advocates also point to accepted educational theories to show that students with disabilities benefit from the inclusive environment. According to Kunc (in Villa, Thousand, Stainback and Stainback, 1992), the inclusive environment more closely meets students’ needs in accordance with Maslow’s hierarchy. The segregated environment inappropriately places achievement before belonging. That is, students must achieve in the segregated environment before they can belong in the general environment. According to Kunc, proponents of the inclusive environment understand that students must know that they belong before they can achieve.

A number of factors could be responsible for the increase in performance of students with disabilities in the inclusive environment. Teachers who succeed in the inclusive environment utilize superior teaching strategies such as team- or co-teaching, universal design, and differentiated instruction. According to Ferguson, Desjarlais, and Meyer (2000), these along with other evidenced-based strategies uniquely equip the inclusive environment for student success. Further research is necessary to determine which of these numerous strategies and methods impact learning the most within the environment.

However, little research has been carried out that displays the impact of the inclusive environment as an educational method, strategy, or treatment for students who have not been identified as having a disability. It is not known how students without disabilities perform in the inclusive environment where students with disabilities are present, active members in the learning process.

As schools seek to maximize student performance in light of high-stakes testing, identifying each predictor for student success is vital. Therefore, identifying environments in which students are learning best would prove valuable to stakeholders. As well, subsequent research regarding support or justifications for aspects of the inclusive environment will help refine the practice of teachers in every environment. To this point, the inclusive environment has gained favor and been mandated as a basis for the education of students with disabilities as noted in its requirement of the least restrictive environment provision of the Individuals with Disabilities Education Act (P.L. 94-142, Section 1412 [5] [B]). The inclusive environment has been generally accepted as increasing the educational performance and social experience of students with disabilities. However, an experiment measuring the performance of students without disabilities in the inclusive environment compared to a control group of their peers in the segregated environment is necessary. Then, further analysis of the environment can take place to identify those aspects that this unique environment provides that benefits all students.

The inclusive environment represents a change for how students with and without disabilities have historically learned. This environment has the intent to embrace all students and meet their educational needs. According to Lipsky and Gartner (1998); Connor and Ferri (2007), increasing the performance of students with disabilities and differences requires a restructuring of the practice and approach of education—not addressing students with differences as a part of a separate system. Lipsky and Gartner go on to assert, “A dual system of education fails all students, primarily those with disabilities.” As well, “separation is costly, a civil rights violation, and a cause for limited outcomes for students with disabilities” (p. 78). The authors assert that under this inclusive
model, the services and nature of the schools are in need of improvement—not further classifying its students who are suffering under the schools’ care. Further, including students with differences ought to be a part of a model system of school improvement. According to Lipsky and Gartner (1998), school improvement with a foundation of including all students “incorporates an end to labeling students and shutting them out of the regular classroom to obtain needed services” (p. 81).

Often miscommunication among policy-makers such as government officials, administrators, school boards, and local educational associations leads to confusion and mismanagement at the classroom level. According to Ainscow, Farrell, Tweddle and Malki (1999), “Within the data, it was apparent that there was general support for inclusive education but enormous differences of opinion about LEA inclusion policies and what they might involve” (p. 2). The differing agendas of the various stakeholders could place teachers and parents in a precarious position regarding how their student will receive the best education. In another study, Ainscow, Booth, and Dyson (2004), identify the different pressures and “the nature of the tensions between national policies for raising standards and reducing marginalization” (p. 137). Zaretzky (2005) notes the lack of consistent dialogue between principals, parents, and teachers as problematic to orchestrating a successful environment. “Perpetuating an us versus them division between scholars in special education and disability studies is counterproductive and damaging to attempts by practitioners to attend to multiple interests and ways of knowing” (p. 82). Such examples highlight the difficulties associated with putting theory into practice in regard to creating an inclusive environment.

Constructing a new educational environment with such bold aspirations would certainly require a shift from the dual system of labeling, segregation, and exclusion of the past. Authors such as Lipsky (2005) claim that such a system fosters the growth and development of each student to his or her potential regardless of ability or disability. According to Lipsky (2005), such a system should include “strong leadership, quality teachers, challenging curriculum, differentiated instruction, careful and regular assessments, engagement of parents and community, and a focus on the meeting of standards and the achievement of outcomes” (p. 156). Similarly, Crockett (2002) claims, “What schools really require are responsive leaders—knowledgeable persons in positions of influence who are committed to ensuring contexts that support learning for each and every student” (p. 157).

Several studies have gathered evidence regarding performance in the inclusive environment. Farrell, et al. (2007) studied the relationship between the inclusion of students with disabilities and academic achievement in primary and secondary schools in England. They examined academic performance at several traditional benchmarks and sought a relationship between that performance and the level of inclusiveness at that school. First, they found no significant statistical relationship between the performance of a district and its level of inclusiveness. That is, in all, the performance of a rather segregated group (or group without students with disabilities) could not be statistically distinguished from a more inclusive group—which of course included students of more varying ability. The authors show the miniscule impact of including a great number of students in the district, in showing that introducing students eligible for a free school meal had 15.54 times more negative impact on student scores than the introduction of students with special needs. Thus, they concluded that schools should not worry about the inclusive environment negatively impacting the performance of students without disabilities.
In a four-year study, Peetsma, Vergeer, Roeleveld, and Karsten (2001) measured the performance of matched pairs of pupils—one in a mainstream school and the other in a special school. They determined, “At-risk pupils in regular education made more progress in mathematics than pupils in schools for pupils with (learning or behavior difficulties).” As well, “Pupil’s cognitive development in regular education was significantly stronger” (p. 130). Mastropieri et al. (2006) found similar results in a study involving traditional versus collaborative educational approaches in the inclusive science classroom. According to the authors, “Students in inclusive science classes can work with each other in critical content areas, and when they do so, their content area learning improves at a rate greater than that attained through instruction that is more traditional” (p. 136).

Idol (2006) published perhaps the most comprehensive study on inclusive environments. Idol found in a study of inclusive elementary schools that a majority of the teachers reported that the performance of students without disabilities improved or was unaffected by the presence of students with disabilities in the classroom. Similarly, a majority also reported that having students with disabilities in the classroom either increased test scores of the students without disabilities or scores remained about the same. To sum up, “These data provide evidence that the presence of students with disabilities in the general education program had not been deleterious to the test performance of the general education students” (p. 85).

Idol (2006) found similar results in a study of four secondary schools. Again, a large majority of teachers reported that student performance either improved or remained unaffected by the presence of students with disabilities in the classroom. “The most striking finding was that with one exception, each school made noticeable improvement in average student statewide test scores over a four-year period” (Idol, 2006, p. 89).

Idol (2006) stated, “One of the biggest concerns of many educators and the general public is the possible adverse effect that the presence of student with disabilities in the general education classroom might have on the statewide testing results of other students” (p. 93). Such data should go a long way to dispelling such myths and opening up optimal educational experiences for all students based on practical evidence.

In summary, there is considerably more research that focuses on students with disabilities, and less for students without disabilities that are in the inclusive environment. The purpose of this study, then, is to examine the academic performance of high school students without disabilities who are learning in inclusive environments. The outcome of the present study contributes to the on-going dialogue regarding the most effective environments, strategies, and methods for student learning. The research question guiding this study:

Are there significant differences in the educational performance – measured by Social Studies, Science, Mathematics, and Reading - of 10th grade students without disabilities in inclusive versus segregated learning environments?

Methods

Research Design

For this group comparison study, a post-test only, quasi-experimental design was utilized to assess the differences in the performance of two distinct, mutually exclusive groups: 10th grade students without disabilities who learned in an inclusive environment and 10th grade students without disabilities who learned in a segregated environment (N=203). As these students had not been identified as having a disability, their placement by the school in either the control or tested environment was random.
Performance of Students Without Disabilities in the Inclusive Environment

Setting

According to the Ohio Department of Education School Year Report Cards, the high school achieved an “Excellent” rating for three years prior to this study. This designation indicated that the school achieved a satisfactory number of indicators that the school made progress toward “Adequate Yearly Progress.” Table 1 shows demographic data of the district studied compared to state of Ohio averages.

Table 1. Study District and State of Ohio Average Demographics

<table>
<thead>
<tr>
<th>Enrollment</th>
<th>Poverty</th>
<th>LEP</th>
<th>Disabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>District ABC</td>
<td>3,513</td>
<td>30.9%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Ohio Average</td>
<td>2,679</td>
<td>34.1%</td>
<td>3.4%</td>
</tr>
</tbody>
</table>

Participants

In this study, the target population was the class of 2012 at a suburban Southwestern Ohio High School. Of these 10th grade students, the performance of two distinct, mutually exclusive groups was assessed: 10th grade students without disabilities who learned in an inclusive environment and 10th grade students without disabilities who learned in a segregated environment. For this study, 203 students met the criteria for examination. That is, 203 students could be identified as 10th grade students for the first time and were taking the OGT for the first time. Further, these 203 members of the 2012 graduating class had not been identified as having a disability or have any other special placement requests or designations that kept them from being placed in either a segregated or inclusive classroom randomly.

Naturally, the randomness of each student’s placement is essential to the comparison study as it ensures that variables attributed to each student such as attendance, past performance, or socioeconomic status do not skew the performance of a particular classroom. Thus, scores from students who were placed in a classroom for a particular subject by non-random means were excluded from the study. Administrative placements, parental requests, and students with disabilities are all examples of individual student placements that were non-random. Also excluded from the study were entire classrooms made up of students whose placement was non-random. For example, resource classrooms made up only of students with disabilities and honors classrooms made up of students who had to meet certain criteria and be approved for were not appropriate for the study as their placement was not random. For this reason, the number of scores for each research question and subject area does not equal 203.

Measures

The data for this study was provided from the results of the Ohio Graduation Test (OGT). According to the Ohio Department of Education, the OGT is a criterion-referenced assessment based on the Ohio Content Standards that ensures students who graduate and receive a diploma from a school in the state of Ohio achieve at least minimum standards in the content areas - reading, science, mathematics, and social studies assessments. Roughly 145,000 students took the assessment in 2010 – the year this study took place (Ohio Department of Education, 2011).

Students begin taking the OGT in the 10th grade. Each content area test consists of multiple-choice and written response questions from which a raw score is formed. A scaled score is then derived from the raw score on each test so as to allow for reporting and comparison between different administrations within each content area. For this reason, comparisons across content areas are not appropriate.
Variables

Variables that were controlled include several realities of the environment that could limit the study due to the convenience sampling. These include significant differences in the students involved in each class due to non-random placement. The randomness of each student’s placement in either the inclusive or segregated environment had to be confirmed for his or her performance to be valid and relevant to this study. This random placement of students also accounted for variables other than environment that could impact performance such as class size, attendance, past performance, and socioeconomic status. Other variables that were controlled include significant differences in the teachers in each classroom. The certification and experience of each teacher as well as confirming the uniformity of the curriculum, outcomes, and course mapping are all important variables that were consistent throughout the study.

Data Collection

The test scores for the students selected for the sample were obtained from the Director of Curriculum and Instruction with the permission of the District Board of Education. Then, each student’s classroom placement for that school year was attained through the guidance office of the high school. This information was used to determine whether the student attended an inclusive or segregated class for that content area, which then correlates with the given test. These content areas include social studies, science, reading, and mathematics. All students in the sample were assigned random numbers for reference purposes to protect their identities.

Data Analysis

The data was compared using an independent samples t Test. The alpha level was set at .05. After analysis, the given p-value was compared to the alpha of .05. If the p-value is less than the alpha of .05, then the output is statistically significant and determines whether to accept or reject the null hypothesis of no significant difference existing in the educational performance of students from the inclusive and segregated environments.

Results

The following tables display the performance and descriptive statistics for the research questions: Is there a significant difference in the educational performance of 10th grade students without disabilities who learned in an inclusive environment compared to the educational performance of 10th grade students without disabilities who learned in a segregated environment in terms of the Ohio Graduation Test at ABC High School?

Table 2 displays the descriptive statistics for the students’ test scores for the first research question.

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Segregated</th>
<th>Inclusive</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>432.25</td>
<td>424.52</td>
<td>429.55</td>
</tr>
<tr>
<td>Number (N)</td>
<td>114.00</td>
<td>61.00</td>
<td>175.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>26.81</td>
<td>23.82</td>
<td>26.00</td>
</tr>
<tr>
<td>Minimum</td>
<td>374.00</td>
<td>369.00</td>
<td>369.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>546.00</td>
<td>477.00</td>
<td>546.00</td>
</tr>
<tr>
<td>Range</td>
<td>172.00</td>
<td>108.00</td>
<td>177.00</td>
</tr>
</tbody>
</table>

Table 3 shows the results of the independent samples t Test for performance of students from the inclusive environment (experimental) and segregated environment (control) on the social studies section of the OGT.
Table 3: Independent Samples $t$ Test Results for Social Studies Subtest

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>Levene's Sig</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Segregated</td>
<td>114.00</td>
<td>432.25</td>
<td>.514</td>
<td>-1.886</td>
<td>.061*</td>
</tr>
<tr>
<td>Inclusive</td>
<td>61.00</td>
<td>424.52</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p > .05

Table 4 displays the descriptive statistics for the students’ test scores for the second research question.

Table 4. Descriptive Statistics for Science OGT Scores

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Segregated</th>
<th>Inclusive</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>417.66</td>
<td>417.42</td>
<td>417.57</td>
</tr>
<tr>
<td>Number (N)</td>
<td>102.00</td>
<td>53.00</td>
<td>155.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>21.87</td>
<td>22.28</td>
<td>21.94</td>
</tr>
<tr>
<td>Minimum</td>
<td>373.00</td>
<td>375.00</td>
<td>373.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>495.00</td>
<td>464.00</td>
<td>495.00</td>
</tr>
<tr>
<td>Range</td>
<td>122.00</td>
<td>89.00</td>
<td>122.00</td>
</tr>
</tbody>
</table>

Table 5 shows the results of the independent samples $t$ Test for performance of students from the inclusive environment (experimental) and segregated environment (control) on the OGT.

Table 5: Independent Samples $t$ Test Results for Science Subtest

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>Levene's Sig</th>
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<th>p</th>
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</thead>
<tbody>
<tr>
<td>Segregated</td>
<td>102.00</td>
<td>417.66</td>
<td>.900</td>
<td>-.065</td>
<td>.948*</td>
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<tr>
<td>Inclusive</td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p > .05

Table 6 displays the descriptive statistics for the students’ test scores for the third research question.

Table 6. Descriptive Statistics for Mathematics OGT Scores

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Segregated</th>
<th>Inclusive</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>427.48</td>
<td>417.34</td>
<td>425.28</td>
</tr>
<tr>
<td>Number (N)</td>
<td>126.00</td>
<td>35.00</td>
<td>161.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>22.05</td>
<td>18.48</td>
<td>21.68</td>
</tr>
<tr>
<td>Minimum</td>
<td>374.00</td>
<td>389.00</td>
<td>374.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>492.00</td>
<td>456.00</td>
<td>492.00</td>
</tr>
<tr>
<td>Range</td>
<td>118.00</td>
<td>67.00</td>
<td>118.00</td>
</tr>
</tbody>
</table>

Table 7 shows the results of the independent samples $t$ Test for performance of students from the inclusive environment (experimental) and segregated environment (control) on the mathematics OGT.

Table 7: Independent Samples $t$ Test Results for Mathematics Subtest

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>Levene's Sig</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Segregated</td>
<td>126.00</td>
<td>427.48</td>
<td>.379</td>
<td>-2.487</td>
<td>.014*</td>
</tr>
<tr>
<td>Inclusive</td>
<td>35.00</td>
<td>417.34</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05

Table 8 displays the descriptive statistics for the students’ test scores for the fourth research question.

Table 8. Descriptive Statistics for Reading OGT Scores

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Segregated</th>
<th>Inclusive</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>424.35</td>
<td>423.06</td>
<td>424.00</td>
</tr>
<tr>
<td>Number (N)</td>
<td>136.00</td>
<td>51.00</td>
<td>187.00</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>17.09</td>
<td>15.28</td>
<td>16.59</td>
</tr>
<tr>
<td>Minimum</td>
<td>381.00</td>
<td>377.00</td>
<td>377.00</td>
</tr>
<tr>
<td>Maximum</td>
<td>468.00</td>
<td>451.00</td>
<td>468.00</td>
</tr>
<tr>
<td>Range</td>
<td>87.00</td>
<td>74.00</td>
<td>91.00</td>
</tr>
</tbody>
</table>
Table 9 shows the results of the independent samples $t$ Test for performance of students from the inclusive environment (experimental) and segregated environment (control) on the OGT.

Table 9: Independent Samples $t$ Test Results for Reading Subtest

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>Levene's Sig</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Segregated</td>
<td>136.00</td>
<td>424.35</td>
<td>.502</td>
<td>- .474</td>
<td>.636*</td>
</tr>
<tr>
<td>Inclusive</td>
<td>51.00</td>
<td>423.06</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p > .05

According to the results, in the areas of social studies, science, and reading, the $p$-value is greater than the established alpha of .05; therefore, there was no significant difference in the performance of the students who learned in the inclusive environment versus the segregated environment. In these content areas, students from the segregated environment performed slightly better, but the null hypothesis was not rejected.

The results showed a significant difference in the performance of the students who learned in the inclusive environment versus the segregated environment in mathematics; as students from the segregated environment had a mean score of 10.14 points higher with a $p$-value of .014, which is less than the alpha of .05. Students from the segregated environment performed significantly better, and the null hypothesis was rejected.

Discussion

This study fulfilled the purpose of determining the impact of the inclusive environment on the academic performance of 10th graders for the sample selected. Results were mixed as no significant difference in performance was found in the content areas of social studies, science, and reading. However, a significant difference in performance was found in the content area of mathematics.

Limitations

The quasi-experimental design does produce a number of considerations regarding internal validity. First, the established, intact groups remove the ability for the researcher to randomly assign the participants to the groups. The groups used for this study are a result of the standard scheduling practices of the ABC City School district for the class of 2012. The data attained merely results from records research regarding the students’ performance in those already-assigned groups. This inability to assign the groups establishes a tremendous burden on the part of the researcher to investigate and control the extraneous variables for each participant. This includes considering teacher expertise and certification in the given content areas. This also includes considering the classes in terms of size, attendance, and past performance. For future studies, noting the specific model of teaching employed in each classroom is important as well. In addition, determining whether or not the original assignment to an inclusive or segregated environment for each participant was, indeed, random is imperative.

This study requires random classroom assignments. If a participant were assigned to a specific group for a specific reason, their responses to the environment would corrupt the results. For example, if counselors believed that students with higher IQs may be inclined to help students with disabilities and were subsequently assigned to the inclusive environment at a greater frequency than the segregated environment, then it would be inappropriate to compare the educational performance of the students without disabilities in the two environments. Ultimately, the scores from many students were excluded from this study. Moreover, this study posed absolutely no threat to the well-being of the students involved; as only a record of their performance in the original classroom environment was analyzed. That is, the researcher
had absolutely no impact on the instruction or assigning of students to groups. The students without disabilities were assigned to their classroom assignments per the standard scheduling practices that randomly assigned students without disabilities or any other special considerations to either the segregated or inclusive environment.

The integrity of the study was maintained throughout by controlling a number of different factors that could threaten the validity of the study. First, the randomness of the student placements was ensured by the school’s utilization of a computer program to randomly place those students who did not have special placement restrictions into both the inclusive and segregated environments. Next, teacher certification, class size, and curriculum were all quite consistent. For example, teachers of the same course gave “common assessments” to their students at the end of each unit to gauge each class’s progress in respect to the other classes within the content area.

However, there were other unavoidable aspects of the study that will need further research for their impact to be fully understood. First, most students attended a segregated class for some content areas and an inclusive class for other content areas. It is plausible that there could be a cross-class impact that is currently unknown. That is, the fact that a student attends an inclusive science class could impact her performance in her segregated reading class. Additionally, the number of cases for each environment in the study was different. For example, the segregated classes had 114, 102, 126, and 136 cases involved in the study, while the inclusive classes had 61, 53, 35, and 51 cases involved in the study. Further, the topography, methods, and styles of instruction within those inclusive classes necessarily varied in accordance to the needs of the students in the classroom. The students without disabilities are unavoidably impacted by varied instructional practices. However, their performance was statistically unaffected according to this study. Also, the sample and population somewhat limit the ability to generalize the results to the extent that one would like to infer from the study. In this instance, a suburban Southwestern Ohio School rated “Excellent” by the state demonstrated little or no significant difference in the performance of students in the inclusive environment versus the segregated environment. Certainly, it could be reasonably expected that these results could be replicated in similar settings in schools with similar demographics who have constructed content area departments with the degree of uniformity of curriculum and instruction and similar approaches to the inclusion of students with disabilities into the general education classroom.

Another fact worth noting is that mathematics was the only content area to register a significant difference in performance between the two groups. Though the difference in performance was slight, it was statistically significant. Another way that the mathematics classes differed from the other three content areas pertained to course offerings. While there was a great deal of uniformity in the courses for each content area for social studies, science, and reading (American Studies, Biology, and 10th Grade English, respectively), there were several more classes that had to be considered in order to account for all of the randomly placed 10th grade students in mathematics classes including Algebra, Geometry, Algebra II, and Pre-Calculus. Further research will be necessary to determine exactly what aspect of those inclusive mathematics classes slightly negatively impacted student performance.

Science, social studies, and reading all failed to register a significant difference in performance. At the high school level, many similarities could be identified among those courses. Whatever aspects of learning styles, universal design, or modifications to that instruction that is occurring, clearly, the students
without disabilities seem largely unaffected. This finding is consistent with Idol’s 2006 study of the impact of schools implementing inclusive policies.

**Implications**

Statistics regarding how students perform in the inclusive environment are vital to the various stakeholders involved in public education. Parents of students without disabilities should be interested in such information when they select courses with their students. Teachers should be interested as they work to adopt the most effective, research-based practices in their classrooms. Administrators and other school leaders should be interested as they design courses as well as ideologies for their schools.

Through established research that displays student performance in the inclusive environment, stakeholders can make informed decisions about the educational methods and environments that they mandate for their students. As well, armed with information about student performance in the inclusive environment, quantitative research can press further into which aspects are particularly successful with students at large and recommend replication. Then, qualitative research can log the experiences and topography of these environments and methods. This subsequent research will further refine educational methods, practices, and environments.

In many instances, the inclusive environment may have been viewed as merely an accommodation or legal placement regarding the education of students with disabilities. However, as those students with disabilities are included into the general education environment alongside students without disabilities, naturally, the environment impacts all students. The nature of this impact on student performance across the board is generally unknown. Knowing the effect that this environment has on the performance of students without disabilities is vital to establishing the most effective educational strategies and methods for all students.

The results of this study also imply a number of new quantitative and qualitative questions that must be answered. Stakeholders should note the results of the study in regards to how very similarly students performed in both environments despite the differing topography and methods of instruction between the two groups. In three of the four content areas tested, student performance was statistically unaffected by the different methods of instruction utilized in the inclusive classroom. In addition, student performance was unaffected by the presence and the needs of students with disabilities in the inclusive classroom. This idea has been intimated by researchers as identified in the literature review, but very rarely explicitly studied or stated. That is, the presence of students with disabilities in the general education classroom and all the differences implied by the instruction of such students had little or no discernable impact on the performance of their non-disabled peers in the classroom.

Thus, when considering appropriate placements for students, stakeholders should be mindful of the wealth of academic benefits that students with disabilities gain as well as the social benefits that both students with and students without disabilities see as a result of being included into the general education classroom at, in most cases, no significant detriment to the academic performance of those without disabilities who learn in the inclusive classroom. Stakeholders ought to take an unwavering stance toward including students with disabilities into the general education classroom.

In general, there is still very little known about the true nature of the impact of the inclusive environment on the learning of
students for whom participation in that environment is incidental rather than intended. Developing a more thorough understanding of student learning is essential to establishing the most appropriate educational methods and environments—especially in light of the ever-increasing pressure on stakeholders to elicit greater performance from each student. Such understanding must be derived from valid, appropriate studies that produce observable and quantifiable evidence.

References


THE EFFECTS OF MATH ANXIETY

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Columbus State University

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Columbus State University

Math anxiety is a reoccurring problem for many students, and the effects of this anxiety on college students are increasing. The purpose of this study was to examine the association between pre-enrollment math anxiety, standardized test scores, math placement scores, and academic success during freshman math coursework (i.e., pre-algebra, college algebra, and math modeling). The researchers conducted an exploratory observational study using pre-existing data from the Freshman Orientation Survey, which contained the 9-item Abbreviated Math Anxiety Scale, and institutional research data. The sample included 180 freshmen students at a university in the southeastern United States. A series of descriptive and frequency analyses and correlational analyses were conducted. The results suggest that standardized test scores and math anxiety had a moderate, negative relationship. In addition, there were predominately negative relationships between math anxiety and final course grades, particularly for pre-algebra. This research could assist instructors and advisors to understand the effects of math anxiety on future academic success and to assist students in their college math coursework.

Many Americans struggle with basic math related skills (Philips, 2007), and, while it may be a commonly held belief that most mathematical skills are not important to an individual’s life experiences, research would disagree. Reports have indicated that 58% of American adults do not have the knowledge to calculate a tip for their waiter when out to eat, 71% cannot calculate miles per gallon, and 78% do not know how to calculate the interest paid on a loan (Philips, 2007). Murnane and Levy (1996) reported about half of 17 year olds cannot perform the math needed for a job at a modern automobile plant (as cited in U.S. Department of Education, 2008). They concluded that without a special talent these late adolescent individuals do not have the skills they need to earn middle-class wages.

Mathematical achievement is strongly affected by math anxiety among young adults as well as elementary, middle, and high school students (Hembree, 1990; Ramirez, Gunderson, Levine, & Beilock, 2013). Vaheedi and Farrokhi (2011) define math anxiety as negative cognitions, avoidance behaviors, and feeling pressured and inadequate in performance that combined interfere with solving math related problems in both general life and academic situations. A majority of individuals in the United States have a fear of and dislike for mathematics, according to survey results (Burns, 1998; Zaslavsky, 1994, as cited in Ramirez et al., 2013). As a result, math anxiety has both individual and national consequences. Individuals with math anxiety often avoid studies in mathematics and therefore limit their career options (Hembree, 1990). According to data from
the General Accountability Office (Ashby, 2006), the number of students in the United States pursuing STEM-related (i.e., science, technology, engineering, and mathematics) degrees has declined from 32% during the 1994–1995 academic year to 27% in the 2003–2004 academic year. This avoidance of mathematical skill also limits the country’s employee resources in science and technology (Hembree, 1990). The necessary number of U.S. students for jobs in the STEM fields has been insufficient for decades (U.S. Department of Education, 2008). Therefore, the country has relied on scientists and engineers from abroad; the percentage of this reliance increased from 14% to 22% between 1990 and 2000. This increase occurred across the technology field, and, at the doctoral level, it increased from 24% to 38% (U.S. Department of Education, 2008).

**Theoretical Framework**

Erik Erikson developed a psychosocial perspective of personality development, which suggested there are crises along an individual’s lifespan (Corey, 2005). Each crisis is a turning point for an individual to progress forward or to regress. Erikson’s stage of industry versus inferiority theorized that children, ages 6 to 12, either gain competence or feel they are inferior in certain skill areas. Consistent with Erikson’s industry versus inferiority stage, mathematical problems appear to occur early in a child’s education, and, if not addressed, the problems continue. Math anxiety has been shown to start as young as first and second grade (Ramirez et al., 2013). In the United States, difficulty with mathematics learning increases in late middle school before students move into algebraic concepts (U.S. Department of Education, 2008). In the final report of the National Mathematics Advisory Panel, the members stressed that algebra is a central concern due to its gateway to later mathematical achievement (U.S Department of Education, 2008). Math anxiety causes a student to have low confidence in their ability to tackle mathematical problems, which results in them only taking the minimum required math courses (Vahedi & Farrokhi, 2011). With this avoidance, students feel inferior to their mathematical anxiety and are unable to move forward in their mathematical potential, which is an essential area of their education.

**Review of the Literature**

*Math Anxiety and Age*

In a study conducted by Wigfield and Meece (1988), the worry in relation to math begins to occur between sixth and ninth grade. The researchers found the highest math performance anxiety was evident among ninth grade participants while the least worry occurred among sixth grade participants. This research also aligns with Erickson’s industry versus inferiority stage, which has been applied largely to students ages 6 through 12. At the time and location of this study, sixth graders were clustered with elementary schools. The researchers suggested that because elementary schools do not emphasize evaluation as much as middle and high schools, sixth grade participants may have felt less pressure and therefore less worried about their mathematical skills. With less evaluation, it can be hypothesized within Erikson’s theoretical framework that these sixth graders did not experience great amounts of inferiority and therefore were able to move forward in their mathematical coursework successfully until evaluation became stronger. Wigfield and Meece noted that the school districts of this study placed their ninth grade students in math courses based on their math performance. Thus, the ninth grade participants may have felt anxiety due to the shift in comparison among groups. Many of these students may have
felt inferior to their classmates. While Wigfield and Meece found the greatest difference in anxiety between the sixth and ninth grade participants, the study results reflected small differences across grade levels, indicating little change in anxiety among middle and high school students. In a later study, Hembree’s (1990) research results revealed an inverse relationship for math anxiety and math performance across grade levels.

With little research on math anxiety in children below the fourth grade level, Vukovic, Kieffer, Bailey, and Harari (2013) conducted a research study to examine whether children’s math anxiety in second grade explains discrepancy in their mathematical performance. The researchers sought to control for reading achievement, early numerical reasoning, and application, as well as working memory. Additionally, Vukovic et al. (2013) examined whether the children’s mathematical anxiety score in second grade explained mathematical performance discrepancy in third grade. Unique to this study was the finding of varying significance in the relationships between math anxiety and different mathematical categories (i.e., calculation skills, mathematical applications, and geometry). Mathematical anxiety scores did account for variance in their simultaneous math performance for calculation skills and mathematical applications but did not account for significant variance in geometry; however, the results indicated that math anxiety scores in the second grade did not account for discrepancies in the third grade in any of the three mathematical categories. Overall, the research results revealed negative relationship between math anxiety and math performance continued after controlling for the covariates.

Math Anxiety and Gender

Some studies have found higher anxiety among women (Betz, 1978); however, Hembree’s (1990) research suggested the effect of math anxiety was more prominent among males at the precollege level. In relation to avoidance behaviors, the males in Hembree’s study who had high math anxiety appeared less likely to take further math courses than girls with high math anxiety. The most significant gender difference was among junior and senior high school students. In relation to performance, Hembree’s study revealed that the relationship between higher math anxiety and lower mathematical performance among males in 5th through 12th grades was stronger than it was for females of the same age group. While the study did reveal the presence of higher math anxiety among females rather than males, especially at the college level, the effect of math anxiety on mathematical performance was greater for males and the effect of math anxiety on performance disappeared at the college level.

In Wigfield and Meece’s (1988) study, no differences were found for math anxiety among the sixth through ninth grade males and females in which they studied. The researchers concluded that the male and female participants were equally concerned about their mathematical academic success. Female participants reported greater negative affective reactions to math in comparison to males. The researchers suggested these negative affective reactions can cause females to stop taking mathematical courses as the course content becomes more difficult. According to Chipman, Krantz, and Silver (1992), fewer females take mathematics courses and choose career paths that require math skills.

Campbell and Evans (1997) sought to compare math anxiety between students in an all female math class and students in a coed math class. The 15 participants were taught by the same professor at a small catholic high
school. The results of pre-tests and post-tests revealed that math anxiety decreased for students in the all female class while math anxiety increased for the female students in the coed class. Moreover, math anxiety decreased in the males of the coed class. The researchers hypothesized from the results that the presence of males in the coed math class intimidated the females and contributed to their increased math anxiety. From Erickson’s theoretical perspective, if females are experiencing negative affective responses to mathematics, it could be that they are feeling incompetent or inferior to their male counterparts and are therefore less industrious in their pursuing mathematical skill and achievement.

While much of the literature on mathematical anxiety is fairly broad, there is more recent research on math anxiety among elementary and secondary students. Much of the literature related to math anxiety at the college level is outdated (e.g., Bessant, 1995; Betz, 1978; and Jackson & Leffingwell, 1999). New research would bring contemporary insight to the overwhelming problem of math anxiety and avoidance in STEM-related degrees across college campuses in the United States. In addition, several studies on math anxiety have conflicting results; therefore, further research can provide insight into additional variables that effect mathematical anxiety. The purpose of this study was to examine the association between pre-enrollment math anxiety, standardized test scores, math placement scores, and academic success during freshman math coursework (i.e., pre-algebra, college algebra, and math modeling) at the collegiate level. The research questions were:

1. What is the relationship between math anxiety and standardized test scores among freshman college students?
2. What is the relationship between math anxiety and math placement scores among freshman college students?
3. What is the relationship between math anxiety and final math course grades among freshman college students?

**Methods**

**Participants**

The sample consisted of 180 freshman participants who declared a major within the College and completed the survey in full. Of the 180 participants, 85% (n = 153) were female, and 15% (n = 27) were male. The number of black participants (n = 87; 48.3%) was slightly higher than the number of white participants (n = 72; 40%). The remaining 21 participants, 11.7%, indicated “other” as their racial classification. The College is part of a four-year institution in the southeastern United States that is considered a master’s level school. The institution has enrollment numbers of more than 8,200 undergraduate and graduate students. Table 1 displays the frequency and percentage of participants by their initially declared major within the College.

### Table 1. Frequency and Percentage of Participants Categorized by Initially Declared Major

<table>
<thead>
<tr>
<th>Major</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Childhood Education</td>
<td>30</td>
<td>16.7</td>
</tr>
<tr>
<td>Middle Grades Education</td>
<td>7</td>
<td>1.7</td>
</tr>
<tr>
<td>Secondary Education</td>
<td>6</td>
<td>3.3</td>
</tr>
<tr>
<td>Special Education</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>Health &amp; Physical Education</td>
<td>3</td>
<td>1.7</td>
</tr>
<tr>
<td>Nursing</td>
<td>93</td>
<td>51.7</td>
</tr>
<tr>
<td>Exercise Science</td>
<td>28</td>
<td>15.6</td>
</tr>
<tr>
<td>Health Science</td>
<td>15</td>
<td>8.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>180</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Data Collection**

**Procedures.** The researchers conducted an exploratory observational study using pre-existing data from the *Freshman Orientation Survey* (Brown, 2012) and institutional
research data. The *Freshman Orientation Survey* was administered at the summer orientation sessions to all incoming freshman who declared a major within the College (i.e., education, nursing, health science, or exercise science). In total, there were five sessions offered throughout the summer. At the conclusion of the survey, participants were given the opportunity to consent to their participation and the use of their responses for research purposes. It took the participants between 10 and 15 minutes to complete the survey. To obtain the institutional research data, the researchers completed an eQuest with the Office of Institutional Research, which included the participants’ college identification number and the list of data variables needed within an Excel file. Once all data were collected, the survey data were merged with institutional research data.

**Measure.** The 9-item Abbreviated Math Anxiety Scale (AMAS) was administered as part of the *Freshman Orientation Survey*. Each item (e.g., taking an examination in a math course) was rated by participants on a five-point Likert scale, with 1 representing *Low Anxiety* and 5 representing *High Anxiety*. The AMAS has two sub-scales: the Learning Math Anxiety (LMA) subscale and the Math Evaluation Anxiety (MEA) subscale. The Learning Math Anxiety (LMA) subscale consisted of five items that measure participants’ anxiety while learning math or during math instruction. The Math Evaluation Anxiety (MEA) subscale was composed of four items, which measure the participants’ anxiety during the administration of math assessments (Vahedi & Farrokhi, 2011). Vahedi and Farrokhi (2011) conducted a study with 298 undergraduate college students that were enrolled in introductory level math courses to determine reliability and validity of the AMAS using confirmatory factor analysis. The alpha coefficient was .90 for the AMAS. The alpha coefficients of the LMA subscale (α = .85) and the MEA subscale (α = .88) indicated the subscales were internally consistent. The correlational results of their study confirmed the construct validity of the AMAS and its two subscales. Within the present study, reliability analyses were conducted to determine if the items within each scale provided an internally consistent measurement. A Cronbach’s alpha coefficient of .50 or greater was established as the criterion for reliability (Thorndike, 1951). The alpha coefficient for the LMA subscale was .86, and the alpha coefficient for the MEA subscale was .79, which indicated both subscales were internally consistent measures.

**Institutional Data.** For the present study, the researchers collected the standardized test scores, the placement scores, as well as the math courses taken during freshman year of college, and the final math course grade earned from the university’s Institutional Research database. For standardized test scores, the math subtest scores for the Standardized Aptitude Test (SAT) and the ACT were collected. The math placement scores were determined using one of four methods (T. Howard, personal communication, October 10, 2013).

1. Math Readiness Score, which used a formula involving the high school grade point average and the math score from either the SAT or ACT.

2. Math Placement Test, which could involve the COMPASS Algebra, COMPASS College Algebra, and COMPASS Trigonometry test scores depending on student performance.

3. Written, pencil-and-paper placement appeal based on the course sought.

4. College level transfer credit, which included Advanced Placement scores.

Pre-algebra, college algebra, or math modeling were the three selected introductory
math courses for which final course grades were requested. Pre-algebra is a preparatory math course for the student whose math placement test score disqualifies them to take math modeling or college algebra. The course covers equations, inequalities, and operations with real numbers, functions and their graphs as well as systems of equations. College algebra is a functional approach course that incorporates technology and appropriate applications. The course objectives include functions and their graphs, inequalities, linear, quadratic, piece-wise defined, rational, polynomial, and logarithmic functions. It is a course designed to give sufficient knowledge of algebra for the continued study of calculus. Math modeling is an introductory course on elementary functions of mathematics including graphical, numerical, symbolic, and verbal techniques (Academic Affairs, 2013).

Results

Using SPSS, a series of descriptive statistics and frequency analyses were conducted. Then, a series of correlational analyses (i.e., Pearson \( r \) correlations) were conducted for pre-enrollment math anxiety (LMA and MEA subscales), standardized test scores, math placement scores, and academic success during freshman math coursework (i.e., pre-algebra, college algebra, and math modeling). To interpret the strength of a relationship, the researchers used Cohen’s (1988) guidelines, which establishes a correlational coefficient between .10 and .30 as a weak relationship, a correlational coefficient between .30 and .50 as moderate, and a correlational coefficient above .50 as strong. A correlational coefficient between -.10 and .10 is considered to have no relationship.

Research Question #1: Standardized Test Scores

For the participants who took the SAT, the mean math score was 460.51 with a standard deviation of 65.37, and the math scores ranged from 330 to 700. The mean math score for the participants who took the ACT was 19.06 with standard deviation of 2.77, and the math scores ranged from 15 to 26. The correlational analysis revealed a moderate, negative relationship between SAT math scores and math anxiety on the LMA subscale (\( r = -.357 \)). For the MEA subscale, the negative relationship between SAT math scores and math anxiety was weak (\( r = -.191 \)). In addition, the relationship was weak and negative between ACT math scores and math anxiety on the LMA subscale (\( r = -.187 \)); however, there was no relationship found between the ACT math scores and the MEA subscale (\( r = .032 \)).

Research Question #2: Math Placement Scores

Of the 180 participants, 51.9% (\( n = 108 \)) were placed in pre-algebra, 16.3% (\( n = 34 \)) were placed in college algebra, and 21.2% (\( n = 44 \)) were placed in math modeling during their freshman year of college. The remaining 10.6% of the participants were placed in higher math courses beginning with pre-Calculus course. For participants placed in pre-algebra, the mean LMA level was 2.71 with a standard deviation of 1.04, and the LMA scores ranged from 1.00 to 5.00. The mean MEA level among the pre-algebra participants was 3.70 with a standard deviation of 1.01, and the MEA scores ranged a range from 1.00 to 5.00. For participants placed in college algebra, the mean LMA level was 2.21 with a standardized deviation of 1.01, and the LMA scores ranged from 1.00 to 4.00. For the same participants, the mean MEA levels was 3.64 with a standard deviation of 0.87, and the MEA scores ranged a range of
1.75 to 5.00. For participants placed in math modeling, the mean LMA level was 2.21 with a standard deviation of 0.95, and the LMA scores ranged from 1.00 to 4.60. The mean of the assessment scale was 3.29 with a range of 1.00 to 5.00 and a standard deviation of 1.08. The results revealed a weak, negative relationship between participants’ math placement scores and both the LMA subscale \(r = -0.206\) and the MEA subscale \(r = -0.111\) of the AMAS.

**Research Question #3: Final Course Grades**

When examining participants who earned an “A” in one of the math classes, the lowest anxiety was found for students who made an “A” in pre-algebra. The mean for the LMA subscale was 2.52 with a standard deviation of 1.00, and the LMA scores ranged from 1.20 to 4.40. The mean for the MEA subscale was 3.38 with a standard deviation of 0.96, which was higher compared to the LMA subscale mean, and the MEA scores ranged from 1.75 to 5.00. The mean for the LMA subscale among participants who took college algebra and earned an “A” was 2.23 with a standard deviation of 0.83, and the LMA scores ranged from 1.00 to 3.60. The mean MEA level was higher for this group \(M = 3.53; SD = 0.92\) with scores that ranged from 1.75 to 5.00. For participants who took math modeling and earned an “A”, the mean LMA level was 2.42 with a standard deviation of 0.97, and the LMA scores ranged from 1.00 to 4.00. For this same group of participants, the MEA mean was higher at 3.81 with a standard deviation of 0.77, and the MEA scores ranged from 2.00 to 5.00.

Among the participants who failed pre-algebra, the mean LMA level was 2.78 with a standard deviation of 1.16, and the LMA scores ranged from 1.00 to 4.80. The mean anxiety level on the MEA subscale was 3.88 with a standard deviation of 1.03 for students who failed pre-algebra, which represented moderate to high anxiety during math instruction. The MEA scores ranged from 1.25 to 5.00. Participants who failed college algebra had a mean LMA level of 2.48 with a standard deviation of 1.32, and the LMA scores ranged from 1.40 to 4.60. For this same group, the participants were found to have a mean of 3.75 with a standard deviation of 1.09 on the MEA subscale. The MEA scores ranged from 2.50 to 5.00. For the participants who took math modeling and failed the course, the mean LMA level was 2.10 with a standard deviation of 1.20, and the LMA scores ranged from 1.40 to 4.60. For this same group, the participants were found to have a mean of 3.81 with a standard deviation of 0.77 on the MEA subscale. The MEA scores ranged from 2.50 to 5.00. Interestingly, for this sample, the results suggest that participants who earned an “A” as their final grade experienced nearly as high levels of anxiety on the MEA subscale as the participants who failed the course. Table 2 displays frequencies and percentages of final course grades by course.

**Table 2. Frequency and Percentage of Final Course Grades by Course**

<table>
<thead>
<tr>
<th>Final Grade</th>
<th>Pre-Algebra</th>
<th>College Algebra</th>
<th>Math Modeling</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(n)</td>
<td>%</td>
<td>(n)</td>
</tr>
<tr>
<td>A</td>
<td>15</td>
<td>14.4</td>
<td>22</td>
</tr>
<tr>
<td>B</td>
<td>29</td>
<td>27.9</td>
<td>22</td>
</tr>
<tr>
<td>C</td>
<td>26</td>
<td>25.0</td>
<td>12</td>
</tr>
<tr>
<td>D</td>
<td>14</td>
<td>13.5</td>
<td>6</td>
</tr>
<tr>
<td>F or WF</td>
<td>20</td>
<td>19.2</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
<td>100%</td>
<td>67</td>
</tr>
</tbody>
</table>

Findings suggest a negative relationship between math anxiety and the final grade.
of math coursework during the freshman year, particularly in the pre-algebra course. A weak, negative relationship was found between students’ final pre-algebra course grade and both the LMA subscale ($r = -.104$) and MEA subscale ($r = -.183$). For college algebra, no relationship was found between final course grade and the LMA subscale ($r = -.057$) or between final course grade and the MEA subscale ($r = .063$). The relationship was found to be weak and positive between math modeling final course grades and the LMA subscale ($r = .145$); however, there was no relationship found between math modeling final course grades and the MEA subscale ($r = .056$).

**Discussion**

The researchers recognize that at times anxiety drives a student to do well rather than hindering their success, but the data reflects a higher percentage of students in the latter category. While several of the correlations from this study were too weak to show a relationship, some conclusions can be made. Concerning math anxiety and standardized test scores, participants’ anxiety level on the LMA subscale of the AMAS had the strongest, negative correlation. The mean scores on the MEA subscale of the AMAS were consistently greater for math placement scores compared to the mean anxiety levels on the LMA subscale. Moreover, a major finding of this study was the higher anxiety levels on the MEA subscale for all final course grades in pre-algebra, college algebra, and math modeling. These findings suggest greater anxiety levels occur for students during math assessment than during math instruction.

As math anxiety is a reoccurring issue among students, this research can better educate instructors, faculty, and advisors to understand the effects of math anxiety on future academic success and therefore assist them in their guidance of students during college math coursework (Jackson & Leffingwell, 1999). While math anxiety is a result of math-skill related fears, it can have as much to do with the experience of anxiety itself and a student wanting to avoid repeated anxious feelings, especially in public. If educators can help students get through the road block of mathematical inferiority and anxiety and gain confidence in their ability to apply math skills successfully, students can begin to face the challenges associated with math and move forward rather than avoid such challenges, according to Erikson’s theory of psychosocial development.

Some limitations existed within this study. The sample size was small and conducted within one College. The participants tended to be female, which accounts for nearly 75% of the College’s population, and only represented a few majors. Additionally, not every student took a math course during their freshman year. The rationale for this occurrence may be a student avoiding mathematics due to anxiety; however, there is no evidence supporting this hypothesis. Other variables could affect final course grades other than academic performance and math anxiety. For example, a student may have struggled in the math course due to difficult circumstances occurring outside of the classroom. Lastly, the variety of methods for determining the math placement scores could be a limitation to this study. Further research is needed to determine the generalization of this research. First, a larger more diverse sample could assist in generalizing the data. The *Freshman Orientation Survey* (Brown, 2012) will be administered during subsequent orientation sessions in order to continue the data collection process and expand the pool of participants. Second, future research could examine the effect of math anxiety among teachers and the math achievement of their students in the P-12 classroom.
References


Introduction

The National Research Council (2001) reported that one-third to one-half of children and adults with autism spectrum disorder (ASD) do not use speech and/or language functionally and are in need of speech-language therapy. Speech-language therapy for these individuals typically involves education, guidance, and support in the use of augmentative/alternative communication (AAC) devices and strategies. AAC devices can be customized for individuals who are verbally challenged to provide opportunities for more effective communication (Millar, Light, & Schlosser, 2006). Furthermore, Romski & Sevcik (1996) reported that children who use AAC often experience an increase in their development of language skills. Many
of the more high-tech AAC devices actually use speech output technology and are called speech generating devices. Speech generating devices are frequently used in therapy for children with ASD. Several studies have reported that the use of speech generating devices with children who have ASD has a positive impact on communication behaviors such as labeling skills and natural speech output (Brady, 2000; Sigafos, Didden, et al., 2003; Heztroni & Tannous, 2004; Ganz, Earles-Vollrath, Heath, Parker, Rispoli, & Duran, 2012).

This study examined the expressive communication behaviors of a child with ASD as his speech generating device was introduced, discontinued, and resumed over a period of approximately six years. The child was diagnosed with severe ASD at two years of age when speech, language, and social interaction skills failed to develop normally. The child was from a middle-class family and had no siblings. Prior to receiving speech-language therapy, the child was exclusively non-verbal. The Picture Exchange Communication System (PECS) and Discrete Trial Training were initiated immediately as the child began receiving speech-language therapy. In addition to private speech-language therapy, the child received privately contracted physical therapy and occupational therapy. Information regarding the frequency and duration of these services were not available to investigators.

This child obtained his first speech generating device at four years of age. He received ongoing speech-language therapy from a licensed and certified speech-language pathologist who focused a substantial amount of each therapy session on the use of the speech generating device for effective communication. When the child reached eight years of age his family relocated to a neighboring school district. As a result, his speech-language therapy was delivered by a different speech-language pathologist, who also held professional certification and state licensure. Subsequently, his speech generating device was discontinued and for the next two years his speech-language therapy focused exclusively on goals targeting the use of communication pictures and gestures for expressive communication. After two years with no use of a speech generating device, the child’s family re-enrolled the child in speech-language therapy with the original speech-language pathologist. At 10 years of age, the child received the manufacturer’s latest version of the original speech generating device and resumed speech-language therapy, which again concentrated on his functional use of the device.

**Methods**

A retrospective design was used in this case study to observe and record the child’s expressive communication behaviors. The specific expressive communication behaviors studied were communication acts (CAs) per obligatory context (OC) per minute, the percent of total communication acts, the number of different words naturally verbalized, and the different types of words naturally verbalized. This design included four sampling periods. Video recordings of the child’s communication behaviors were made aperiodically throughout the time span from 4 years of age to 10 years of age. All video recordings were made available to investigators for data collection and analysis. The six-year time span was segmented into four sampling periods of unequal length. Data from the first sampling period (SP1) represented expressive communication behaviors at four years of age. During SP1, and prior to speech-language therapy, the child lacked significant intentional expressive communication behaviors. The second sampling period (SP2) immediately followed SP1 and began when the child was still four years old and continued until the child was eight years old. During SP2 the child received home-based speech-language therapy that introduced the speech generating
device and provided ongoing training and support of the use of this device for expressive communication. Data from the third sampling period (SP3) represented expressive communication behaviors identified as being used by the child during a two-year time span from 8 to 10 years of age. During SP3 the child had no contact with or use of the original speech generating device; however, speech-language therapy continued with expressive communication goals focusing on the use of gestures and pictures. The final sampling period (SP4) began at age ten years. During SP4 the child was granted full access to the latest model of the speech generating device, and speech-language intervention focused on the use of the device for expressive communication.

A certified speech-language pathologist, having more than 12 years of experience serving children diagnosed with ASD, provided speech-language therapy during SP2 and SP4. Two speech generating devices were used in this study: the Prentke Romich Pathfinder™ and the Prentke Romich Vantage™ Lite. Initially, the Prentke Romich Pathfinder™ was provided to the child. The Pathfinder used a Unity® Language System. The child had full access and training in the use of the Pathfinder for approximately four years. The second speech generating device, the Prentke Romich Vantage™ Lite, was used after the child reached the age of ten. This device was the newest version of the Pathfinder having many new features and capabilities although the overall design was not radically different from the original Pathfinder. As with the Pathfinder, the Vantage™ Lite also used a Unity® Language System. The device was capable of storing more than one hour of recorded speech in memory. The digital speech options included DECtalk, Acapela, and RealSpeak. A minor cosmetic difference existed between the two speech generating devices. The Pathfinder™ incorporated a keyboard for icons and the Vantage™ Lite incorporated a digital touch screen for icons. Both devices functioned quite similarly.

Data for this case study were collected from multiple video recordings of the child both with and without the speech generating devices over a period of more than six years. Observations for SP1 were taken from a video recording of the child at four years of age and prior to the introduction of the speech generating device. This recording was approximately 14 minutes in duration and served as the first sampling period of this study. SP2 featured a similar video approximately 31 minutes in duration, recorded after six months of speech generating device training and use followed by an 18-minute video recording after one year of speech generating device training and use. Both of these videos were recorded during routine speech-language therapy sessions with the child using the speech generating device. The child continued to use the speech generating device without interruption for the next four years. At eight years of age the child’s use of the device was discontinued for a period of two years for reasons not associated with this study. During the two-year hiatus (SP3), from eight to ten years of age, the child did not utilize any type of speech generating device but communicated primarily by gesturing and the use of the Picture Exchange Communication System (PECS) (Bondy & Frost, 1994).

At the age of ten, the child received the Prentke Romich Vantage™ Lite. Immediately prior to the child’s reception of the new device, a 29-minute video sample was recorded of the child’s expressive communication skills in a natural environment. Data from this 29-minute video sample were analyzed in SP3 of this study. Once the child received the Vantage™ Lite, eight video recordings were collected during the following six months that documented the client’s functional use of the speech generating device during speech-language therapy and the child’s expressive
communicative progress. These videos preserved approximately 80 minutes of routine interaction with the speech-language pathologist during regularly scheduled therapy sessions. These eight video recordings served as the data source for language observation, categorization, and analysis during SP4 of this study.

Communication behaviors from all video recordings were independently tallied and categorized by two trained observers who systematically identified the child’s expressive communication acts. For purposes of this study, a communication act (CA) was defined as an interactive behavior consisting of 1) gestures, 2) natural verbalizations, 3) verbalizations produced synthetically by the speech generating device, or 4) any combination of the three behaviors that were directed toward another person. Each natural verbalization used by the child to produce a communication act was tallied and categorized as follows: 1) a functional word (i.e., a word articulated with sufficient accuracy to be intelligible to the listener) or 2) a representational word which was operationally defined as an abbreviated natural verbalization with sufficient phonological structure to be interpreted as representing a word by a familiar listener (example: “/m/” for more). Gestures performed by the child, as well as synthetic verbalizations performed by the speech generating device at the direction of the child, were also considered to be communication acts.

The number of obligatory contexts (OCs) was totaled for all video recordings during each sampling period of the case study and an OC per minute of video was determined. The CAs per minute were divided by the OCs per minute to obtain the number of CAs per OC per minute. The CAs per OC per minute was believed to be a reasonable unit of measurement for comparison of the child’s communication behaviors, regardless of the expressive modality used, across each sampling period of this study. These data were tabulated and graphed for comparison.

To further explore the nature of the CAs, data were examined to determine the percent of total CAs that were either gestures produced by the child, words or phrases synthetically produced by the speech generating device at the direction of the child, or natural verbalizations uttered by the child. The data, reported as percentages for each sampling period, were also tabulated and graphed for comparison. The graphs illustrated the impact of the speech generating device on the child’s ability to expressively communicate, as well as the child’s various communication behaviors over the four sampling periods.

In order to better understand the speech generating device’s potential influence on the child’s expressive communication behaviors, the number of different words naturally verbalized and the different types of words naturally verbalized (i.e., representational words or functional words) in each sampling period of the investigation were tabulated. Raw data, for the number of different words as well as the different types of words verbalized per sampling period were graphed.

**Results**

Data for this study were in the form of CAs per OC per minute, percent of total CAs, number of different words verbalized, and types of words verbalized. Data for each of these components are shown for each of the four sampling periods in Figures 1, 2, 3, 4 and 5. Figure 1 shows the child’s CAs per OC per minute. The following outcomes were analyzed: SP1, the first sampling period with no use of a speech generating device, 0.38; SP2 during the use of the original speech generating device, 0.55; SP3, the sampling period during the discontinuance of the speech generating device, 0.6; and SP4 with use of a new model of the speech generating device, 1.08. Results from SP4 revealed a number
greater than one (1.08) which was the result of spontaneous CAs. It is clear from Figure 1 that the child’s CAs per OC per minute increased in both SP2 and SP4 when the child’s speech-language therapy focused substantially on the use of the speech generating device. Conversely, during the third sampling period (SP3) when the child had no access to or therapy with the speech generating device, a minimal change was observed in the overall number of his CAs.

Figure 2 depicts the child’s percent of total gestures. The child used no gestures for expressive communication during SP1 (0%). During SP2, 3.2% of his expressive CAs was gestural while 6.6% of his expressive CAs was gestural during SP3, and 10.1% of his expressive CAs was gestural during SP4. These data suggest that when provided with speech-language therapy and consistent, ongoing use of the speech generating device, the child’s use of gestures steadily increased.

Figure 3 shows the child’s percentages of recorded natural verbalizations and synthetic verbalizations produced by the speech generating device from each sampling period. During SP1, the child did not use any natural verbalizations (0%) as CAs. During SP2, 20.1% of his expressive CAs was natural verbalizations. A total of 35% of his expressive CAs was natural verbalizations during SP3, and 27.7% of his expressive CAs was natural verbalizations during SP4. Results also show that during SP1 and SP3, no data were available for synthetically produced CAs since the speech generating device was not used by the child. During SP2 and SP4, the child used the speech generating device to produce 84% and 67.7% of his expressive CAs, respectively.

Figure 4 shows the total number of different words the child naturally verbalized in each sampling period. In SP1, no verbalizations were observed. In SP2, the child naturally verbalized seven different words. This number was equal to the number of words verbalized during SP3 when the speech generating device was not used by the child. During SP4 the child’s number of naturally verbalized words dramatically increased to 28 different words. The data indicated that each time the speech generating device was utilized the child’s number of different words naturally verbalized increased.

Fig. 1 Child’s communication acts per obligatory context per minute for each sampling period
Figure 5 shows the types of words naturally verbalized by the child in each sampling period. As previously defined, a representational word was an abbreviated natural verbalization representing a word (i.e., “/m/” for more). A functional word was a word articulated with adequate accuracy for correct interpretation (i.e., “more”). In SP1, the child produced no natural verbalizations. In SP2, the child naturally verbalized seven different representational words which remained constant during SP3. During SP4, the child’s natural verbalizations increased to 22 different representational words. Similarly, no
functional words were noted in any sampling period until SP4 when six different functional words were naturally verbalized.

**Discussion**

The results from this study indicated the training and ongoing use of a speech generating device positively impacted the child’s ability to expressively communicate. Specifically, the results revealed that the child’s communication acts (CAs) per obligatory context (OC) per minute increased for both sampling periods during which the speech generating device was utilized. The CAs per OC per minute appeared to plateau when the speech generating device was not being utilized during the two-year time span labeled as SP3. However, when the speech generating device was reintroduced, along with adequate training and support in its use, there was a demonstrative increase in the CAs per OC per minute. Results further suggested that as the child’s verbal skills increased he relied less on the speech generating device to produce CAs. Finally, results suggested that the speech generating device facilitated the child’s verbal communication skills. Specifically, during both sampling periods in which a speech generating device was being used, data indicated an increase in the number of different words verbalized, as well as an increase in functional word usage.
Current results support the findings from previous studies that suggested that the use of a speech generating device improves an individual’s ability to expressively communicate with others (Ahlsen, Sandberg, & Thunberg, 2009; Malandraki & Okalidou, 2007; and Romski et al., 2001). Likewise, current results are in agreement with results from previous studies suggesting that the use of a speech generating device facilitates the acquisition of natural speech communication for individuals who have significant speech impairments (Kouri, 1988; Lloyd & Kangas, 1994; Malandraki & Okalidou, 2007; Romski & Sevcik, 1996; and Scruggs, Mastropieri, & Casto, 1987).

The nature of case studies does not provide sufficient validity or reliability to draw strong conclusions nor make inferences across the entire population of persons with ASD. Still, the unique nature of the circumstances under which this case study was completed does provide a modest level of scientific support for using a speech generating device for some individuals with severe ASD. Perhaps the most interesting findings from this case study for these investigators were 1) the lack of language progress in all communication behaviors tracked in this investigation during the two-year sampling period in which the child did not have access to a speech generating device, and 2) an increase in all targeted expressive communication behaviors after the reinstatement of the speech generating device when paired with guidance and support from the speech-language pathologist.

This case study does have important implications for using a speech generating device to improve the communication skills in some children with ASD. The findings from this study strengthen the theoretical proposition that speech generating devices can be effective tools for enhancing communication competence (Ahlsen, Sandberg, & Thunberg, 2009; Malandraki & Okalidou, 2007; and Romski et al., 2010) and facilitating the acquisition of speech communication for individuals who have significant speech impairments (Kouri, 1988; Lloyd & Kangas, 1994). Clearly, more rigorous randomized controlled trials are needed to delineate the impact of speech generating device usage on communication competence and the facilitation of verbal communication in individuals with ASD.
References


QUALITY OF WORK LIFE: PERCEPTIONS OF JORDANIAN SPECIAL EDUCATION TEACHERS

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The purpose of the current study was to investigate the level of quality of work life QOWL of Jordanian special education teachers. Participants of the study were 133 special education teachers. Results showed that special education teachers cited average level of QOWL. Furthermore, teachers rated administrators’ and colleagues’ respect as the best item of QOWL. Whereas, teachers rated participation in decision making in school as the lowest item of QOWL scale. Results also indicated no statistically significant mean differences due to teachers’ gender, education levels, and type of school (mainstreaming and special education school). Recommendations for future research are presented.

Keywords: quality of work life, quality of life, job satisfaction, special education teacher.

Introduction

Educational literature indicates that special education teachers experience many work related tribulations that affect their quality of life and well-being. For instance, special education teachers experience burnout, that is a response to chronic stress in jobs (Onder & Sari, 2009) rather than regular teachers (Plat-sidou & Agaliotis, 2008). This stress is caused by set of sources, such as the lack of time, caseloads work (Cook & Downing, 2005; Al-Natour, 2008; Wilson, 2002), role conflict (Billingsley, 2004), community’s attitudes toward teacher (Haughey & Murphy, 2001), schedules, lack of administrative understanding to make these schedules, and lack of their possession of communication skills and the adult/adult interaction skills they need to work together effectively (Cook & Downing, 2005). Folostina & Tudorache’s (2012) reported inadequate staff for the big volume of students with severe disabilities, low income, and inadequate sources of the schools.

In addition, according to the recent Al-Natour’s final report for the ministry of education MOE, Jordanian special education teachers face negative attitudes from regular teachers because of their beliefs that special education teacher roles and responsibilities are lower than their’s (Al-Natour, 2008). Moreover, working in teaching field involves a multiplicity of diverse factors which contain: teaching; attaining new information and skills; being continually updated with technological advancement; and contacting students, families, and the community (Pillay, Goddard, &
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Wilss, 2005). However, the field necessitates highly skilled teachers to work with children with disabilities in diverse educational settings (Wilcox, Putnam, & Wigle, 2003).

Accordingly, these stress resources and troubles experienced by teachers have a negative impact, which may lead to diseases, decadent mental and physical health (e.g., headache and blood pressure) and psychological reflexes (e.g., depression and anxiety). Beside these problems cause eventually exhaustion, and leaving works (Brown, Ottilia, Howcroft, Greg, Jacobs, & Tracey, 2009).

Traditionally, work has been a vital part in the life of individuals (Boonrod, 2009; Feizabadi, Hamidi, Khatibzadeh, & Ghamati, 2012), since 65% of useful life of individual is spent in working (Toulabi, Raoufi, & Allahpourashra, 2013). However, Since 1970, QOWL has become one of the important elements for WHO (Feizabadi, Hamidi, Khatibzadeh, & Ghamati, 2012). Walton (2007) stressed that QOWL was a central approach to save human and social values which have been overlooked because of technological improvement of the economic growth and productivity.

QOWL term is based on the believe that human beings are the most important source in the institute as they are truthful, responsible and capable of making important input and they must be treated with dignity and respect (Tabassum, Rahman, & Jahan, 2011). Particularly, the quality of school life is “a synthesis of positive experiences, negative experiences, and other feelings related to specific school life domains” (Leonard, 2002, p. 55). Hence, to measure QOWL, there are specific instruments used for this purpose, such as The Work-related Quality of Life Scale (WRQOLS) (Shike, Naesinee, Jiraporn, Bin, & Nutjaree, 2013).

From the other hand, some studies indicated that QOWL variables may affect in teachers in a set of forms. For example, it affects their commitment level (Louis, 1998), life satisfaction (Demirel, 2014) and happiness (Toulabi, Raoufi, & Allahpourashra, 2013).

Although research has uncovered QOWL, there are very few studies in which QOWL was investigated (Onder & Sari, 2009; Kanten & Sadullah, 2012; Shahbazi, Shokrzadeh, Bejani, Malekinia, & Ghoroneh, 2011). Yet, there is increasing number of research studies that investigate the QOWL among teachers. For instance, in a study of Onder and Sari (2009) examined how teachers’ perceptions about wellbeing is predicted by their perceptions about the quality of school life and burnout levels. Findings indicated that teachers’ perceptions of well-being levels were predicted significantly by the Quality of School Life Scale sub-factors, and burnout scale sub-factor, namely “coping work-related stress.”.

In their study, Kanten and Sadullah (2012) investigated the relationships between QOWL and work engagement. Results showed that there were significant relations between domain of QOWL and work engagement. In another study, Feizabadi, Hamidi, Khatibzadeh, and Ghamati (2012) conducted study, aimed at identifying the relationship between job stress and the quality of life in sport teachers. The result of this study indicated that, there were no significant differences among the stress with fair pay, provide growth opportunities, legislation in organization, social dependence of work life, overall life space, social integrity, and develop human ability.

In a more recent study, the relationship between teachers’ happiness and the working life quality was investigated by Toulabi, Raoufi, and Allahpourashra (2013). The results showed that the components of working life quality (payment rate, professional development opportunity, promotion opportunity, management support, involvement in decision making, work place security) are the variables that have relationship with teachers’ happiness.

In a study of the relationship between job- and life satisfaction among teachers, Demirel
(2014) concluded that the level of job satisfaction among teachers was moderate. The life-satisfaction score was assessed as being above the moderate level. A significant correlation was revealed between life satisfaction and job satisfaction. Job satisfaction of general teachers and preschool teachers, and life satisfaction of female teachers were found to be more high.

On the other hand, QOWL has been identified by Rastegari, Khani, Ghalriz, and Eslamian (2010) as helpful for institutes effort to develop plans and measures to retain employee, advance their working capability, and eventually, protect them from excessive work-related pressure and other psychosocial workplace risks. Havlovic (1991) described QOWL as a valuable indicator for organizational management reforms, since it is a wide construct concerning job satisfaction and other factors related to personal tonicity and organizational goals.

Nationally, Jordan has adopted Education Reform for the Knowledge Economy (ERfKE) II, which includes improvement the status of teachers, as they are central element for reform and change process (MOE, 2014). However, practices in the schools suggest that teacher’s condition does not improve yet. This necessitates conducting research to identify QOWL of special education teachers. According to our knowledge, the current study is perhaps the first one exploring the perceptions of Jordanian special education teacher about their QOWL.

Consequently, the current study reports the findings of a survey study which aimed at exploring special education teachers’ QOWL by answering:

1. What is the level of quality of work life of special education teachers?
2. Do the level of quality of work life of special education teachers differs due to teacher’s gender, education levels, and type of school (mainstreaming and special education school)?

### Methods

#### Design

This research employed a descriptive method design, where a survey was used to gather data about the level of QOWL. The level of QOWL represented the dependent variables. Teacher’s gender, education level, and type of school represented the independent variables.

#### Sample and setting

The sample of the present study consisted of a total of 133 special education teachers (28 males and 105 females) holding fulltime teaching positions in public schools situated in the capital city of Jordan-Amman during the academic year of 2013/2014. Among the 133 teachers, 71 working in mainstreaming schools that provide services for learning disability students were randomly selected. Meanwhile, 62 special education teachers working in 2 special schools for hearing impairment and 2 special schools for visual impairment were purposefully selected. The distribution of the study sample is shown in Table 1.

### Table 1: Distribution of Sample According to Gender, Education level, Years of experience and Type of school

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</tbody>
</table>
Instrumentation and Implementation

A survey instrument was developed to address the research questions posed in this study. A survey form consisted of two sections: Section I required teachers to provide demographic information by placing a check mark next to the items that applied. Section II was prepared to gather information about the level of the teachers’ QOWL on 15 items using a five point Likert-type scale (ranged from (1) indicating “never; to (5) indicating “always”).

Seven experts were asked to review the items and provide feedback to authors, in order to establish the validity for the survey. All reviewers’ comments and suggestions were taken into consideration and were incorporated in the final survey. All reviewers affirmed the validity of the survey and its ability to measure the level of the special teachers’ QOWL. Reliability indices were determined by piloting the survey on sixteen teachers (not included in the study sample). The coefficient alpha statistics for level of the special teachers’ QOWL scale .750, reflecting good levels of internal consistency.

The implementation process included contacting the Ministry of Education MOE in Jordan to provide a list of schools that provide special education services and numbers of special education teachers in these schools. One hundred and forty five special education teachers (i.e., 70 working in mainstreaming schools that provide services for learning disabilities students, 75 special education teachers working in 4 special schools) were selected. In a cover letter in the packet, principals were asked to distribute the instruments to the special education teachers and survey instruments were mailed to participants through their directorate of education of Amman districts. The questionnaires were returned in a sealed envelope to the researchers. Four weeks later, (133) questionnaires were sent back to the researchers out of (145), reflecting a return rate of (91.7 %).

Data Analysis

The data were entered and analyzed using the Statistical Package for the Social Sciences (SPSS-16.0). Descriptive statistics (e.g., frequencies, means, and standard deviations) were presented in the result section. In addition, One-Way analysis of variance (ANOVA) and independent samples t test were used to check for any significant mean differences that could be attributed to: teacher’ gender, type of disability, and education level.

Results

Results of the first research question: What is the level of quality of work life of special education teachers?

To answer the first question, means and standard deviation were obtained. The scale used to measure the sample responses was divided into three levels; Low level of QOWL with means ranging (1-2.33), average level of QOWL with means ranging (2.34-3.66) and high level of QOWL with means ranging (3.67-5.00).

Table 2 shows teachers’ responses on the scale that measures level of QOWL among teachers. As shown, the total mean score for this scale was (3.64) which indicates that special education teachers cited average level of QOWL. Teachers rated “ My administrator and colleagues respect me “ as a best item of QOWL scale with a mean score (4.58), followed by “Students and their families and community members respect me” with a mean score (4.55). As well, teachers rated “ I participate in decision making in my school “ as the lowest item of QOWL scale with a mean score (3.0), followed by “My colleagues provide me with instructions of teaching technique and curriculum and guidelines to behavior modification” (3.1), “I receive training courses for professional development” (3.26), “I feel satisfy of my income from my work as a teacher” (3.27), and “ I interchange...
the classroom visits with my colleagues for teaching observation “(3.3).

Results of the second research question: Do the level of quality of work life of special education teachers differ due to teacher’s gender, education levels, and type of school (mainstreaming and special education school)?

Regarding teachers’ gender, independent sample t-tests were conducted. Results of t-tests revealed no statistically significant mean differences between males and females on QOWL seen by special education teachers (t = -1.866, p < .834).

A One-Way ANOVA was administered to help determine the influence of the level of education on the total QOWL subscale score. The omnibus ANOVA statistic for this analysis revealed no statistically significant differences that could be attributed to level of education on the total QOWL variable for special education teachers (F = 1.502, p =.226).

With regard to type of school, independent sample t-tests were conducted. Results of t-tests revealed no statistically significant mean differences between mainstreaming and special education school on QOWL seen by special education teachers (t = -1.700, p < .621).

Finally, a One-Way ANOVA was administered to determine if QOWL varied according to the level of education. The omnibus ANOVA statistic for this analysis revealed no statistically significant differences that can be ascribed to level of education on the total QOWL variable for special education teachers (F = 1.502, p=.226).

Discussion

The evaluation of QOWL may be fundamental for the prevention of work-related diseases and in promoting the workers’ health (Fernandes & Rocha, 2009). Consequently, assuring higher QOWL is critical for promoting teacher’s quality and retention in special education (Billingsley, 2004), to be able to enhance the learning outcomes of students with special needs (Evers, Tomic, & Brouwers, 2004; Billingsley, 2004).

This study investigated the QOWL level of Jordanian special education teachers. In analysis of the results of the current study, a number of remarkable trends emerged. Findings suggested that special education teachers reported average level of QOWL in general. Research studies indicate divergent results

| Table (2): Means and Standard Deviations of teachers’ perceptions of QOWL |
|-----------------------------|-----------------|-----------------|
| Item                        | M (SD)          |
| My administrator and colleagues respect me | 4.58(0.83) |
| Students and their families and community members respect me | 4.55(0.79) |
| I participate in decision making in my school | 3.0 (1.26) |
| My colleagues support me | 3.6 (1.09) |
| My colleagues provide me with instructions of teaching technique and curriculum and guidelines to behavior modification | 3.1 (1.15) |
| I effectively communicate with my colleagues (e.g., collaboration and group teaching) | 3.8 (1.11) |
| I receive training courses for professional development | 3.26(1.2) |
| I interchange the classroom visits with my colleagues for teaching observation | 3.3 (1.14) |
| I receive feedback from administrator, supervisors, colleagues. | 3.5 (1.39) |
| My work load is suitable and rationale | 3.6 (1.1) |
| There is adequate material and instruments that I need (books, copier, aids....) | 3.7(1. 1) |
| I feel of work-related security | 3.8(1.27) |
| There is leisure activities in my school | 3.5 (1.26) |
| I feel satisfy of my work condition and environment | 3. 7(1.26) |
| I feel satisfy of my income from my work as a teacher | 3.27(1.35) |
| Total | 3.64 (.69) |
related to QOWL of special education teacher. Folostina & Tudorache’s (2012) indicated that the majority of the teachers stated moderate to high level degree of professional satisfaction. Whereas, Demirel’s study (2014) revealed that the teachers had high levels of job satisfaction. Haughey & Murphy’s (2001) indicated that only 22% of teachers were moderately or highly satisfied with their works.

The level of QOWL that is rated by Jordanian special education teachers may be hindered by many barriers which teachers face (Cook & Downing, 2005; Al-Natour, 2008; Barth, 2001; Chan, 1998; Durham, 1992; Wilson, 2002; Burke & Greenglass, 1995; Folostina & Tudorache, 2012; Cook and Downing, 2005).

From different angle, results showed that teachers rated “My administrator and colleagues respect me” as the best item of QOWL scale. This result differs with some research (e.g., Normore & Floyd, 2005; Marable & Raimondi, 2007; Erdemir, 2007) which indicated teachers dissatisfaction of administration, and, other research (e.g. Corrie, 2000; Hebert, 2002; Johnson, Kardos, Kaufman, Liu, & Donaldson, 2004) which showed teachers dissatisfaction of their colleagues.

This finding mirrors Haughey & Murphy’s (2001) who mentioned that relationship with co-worker and administrators were sources of significant satisfaction of teachers. In addition, Narehan, Hairunnisa, Norfadzillah, & Freziamella (2014) mentioned that interpersonal relations was one of the most influence factors on QOWL. Moreover, this result supports the general view that the Jordanian public schools have strong social relationships network. Therefore, this status within Jordanian public school could have positive impact on enhancement the QOWL level of special education teachers.

However, National Association for the Education of Young Children NAEYC (2005) actuates teacher “To establish and maintain relationships of respect, trust, confidentiality, collaboration, and cooperation with co-workers” (p. 5). As well, poor relationships among school have been cited as a source of burnout for special educators, and they have a negative influence on retention decisions (Binglssley, 2004; Miller, Brownell, & Smith, 1999).

In spite of the conclusion of Toulabi, Raoufi, and Allahpourashra (2013) that the one of the crucial components of working life quality is involvement in decision making, nevertheless the current study shows that teachers rated “I participate in decision making in my school” as the lowest item of QOWL scale. This result is inconsistent with Haughey & Murphy’s (2001) which indicated that the majority of participants showed satisfaction with their participation in decision-making at the school level. In addition, this result differs with Ngang’s (2012) which indicated that special education teachers practice dimensions of teacher leadership at high level. This finding was not surprising and it is in line with Skrtic’s (1991) who indicated that special teachers often work in bureaucratic organizations where teachers do not, indeed, have an active role over important decisions. On the other hand, this can also be interpreted by Hanuscin, Rebello, and Sinha’s study (2012) which revealed that teachers perceive decision making as beyond their daily tasks. Also, decision-making typically remains within administrators and professionals who do not hold teacher duties (Silva et al., 2000). This result is considered logical because the teacher role as a decision maker is contemporary in international literature, especially in Jordan. Therefore, special education teachers in Jordan may not be prepared and familiar with this role.

Interestingly, results of t-tests revealed no statistically significant mean differences between males and females on QOWL seen by special education teachers. This result, however, is inconsistent with the findings of many previous research studies (e.g. Demato,
2001; Yılmaz & Şahin, 2009; Perie & Baker, 1997; WU & You-I, 2001; Türkoglu, Özbey, & Buyuktanir, 2014). From other hand, like in the present study, some research mirrors our finding (e.g. Demirel, 2014; Tuzgol, 2010).

The omnibus ANOVA statistic for this analysis revealed no statistically significant differences that can be ascribed to type of school (mainstreaming and special education school) on the total QOWL. This finding is partially consistent with Demirel’s (2014) which reported that status of working in private or public schools, did not affect life satisfaction. In addition, In our study, all participants were working in public schools which inspected by the Ministry of Education. Beside, these schools have comparable conditions where teachers holding fulltime permanent teaching positions and have no risk of dismissal.

Finally, the omnibus ANOVA statistic for this analysis revealed no statistically significant differences that can be ascribed to level of education on the total QOWL. These results are considered logical as the situation of teachers who hold higher qualifications will not differ in their schools, since they will remain teachers. For instance, a teacher who gains postgraduate certificates (master’s degree or PhD) will get an petite annual increasing in his/her salary (few Jordanian dinars JD).

**Conclusion**

Considering teacher perceptions are important input to achieve enhancement process of their work conditions and QOWL. Hence, this could support contemporary educational reforms process. Our results clearly indicate that special education teachers, who participated in the study, have average level of QOWL. Depending on the results of this study, Jordanian policy makers; specially MOE should consider the special education teachers QOWL. Consequently, building professional learning communities is essential since they provide participation opportunities for teachers on decision making and fortify relationships between administrators and teachers (Childs-Bowen, Moller, & Scrivner, 2000). In addition, increasing teachers capability needs supporting from their administrators (York-Barr & Duke, 2004; Childs-Bowen, et al., 2000; Printy, 2008; Barth, 2001).

Improving teacher’s QOWL can be achieved if we concentrate on enhancing the entire teacher workplace, providing professional development opportunities, reconsidering leadership and decision-making roles, and enhancement of teacher economical status.

Due to limited similar studies in the literature, it was suggested that the number of both descriptive and predictive studies should be increased on the topic (Onder & Sari, 2009). Accordingly, authors recommend of additional research using different population, qualitative research, developing QWL programs and investigating QOWL as well as in different settings in private sectors.

**Limitations**

Results of this study are limited to its sample size and special education services settings included in the capital city of Jordan-Amman during the academic year of 2012/2013. This limitation affects generalization of results. In addition, this study is a descriptive method design, where a only self-reported survey was used, so only special education teacher perceptions have been presented. Additional research should ascertain further insight into regarding special education teacher QOWL. This research can use direct observations in authentic settings or interviews.
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ASIAN PARENTING STYLES AND ACADEMIC ACHIEVEMENT: VIEWS FROM EASTERN AND WESTERN PERSPECTIVES

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The authors were drawn to the media phenomenon created by Amy Chua’s book *Battle Hymn of the Tiger Mother* about her parenting experiences raising two daughters. Chua’s parenting style is quite strict by US standards. The authors classify her style as Ethnic Minority, considered a subset of Authoritarian parenting style as compared to Authoritative style that is related to high academic achievement. This paper examines Asian parenting style and its relationship with students’ academic performance through the lens of western parenting style literature and Confucianism. Concerning the parenting style literature, a framework of variables is introduced that defines each style. We found these variables relate to Confucianism that places value on education and family dynamics. In this paper, three conclusions are reached: 1) the Ethnic Minority parenting style needs to be more prominent in the parenting style literature and more research needs to be conducted, particularly with Asian descendants. 2) Asian parenting style needs to be singled out and examined with an in-depth look at its relationship with children’s academic performance. 3) Confucianism with an emphasis on education and family dynamics, seems to foster the academic achievements of children. This impact needs to be further explored.

Introduction

Our interest in Asian parenting style drew from the media attention given to Amy Chua’s (2011) book *Battle Hymn of the Tiger Mother*. Chua’s book is a memoir of her own philosophy and practices of parenting raising two high achieving daughters. She placed great emphasis on her children’s academic achievement. Chua’s views and practices raised much controversy regarding parent-child interaction. Public media began debating and discussing different views and practices about parenting (Chang, 2011; Chua, 2011; Flanagan, 2011; Husbands, 2012; Kohler, Kilgo, & Christensen, 2012a; Kohler, Kilgo, & Christensen, 2012b; Ninh, 2011; Poon, 2011; Wang, 2011).

Chua connects her parenting experiences with her children’s academic achievement. This motivated our conceptual inquiry about the relationship between Ethnic Minority parenting style and achievement in contrast with Authoritative style which is also related to high achievement in children in the literature. Additionally, we explore how Confucianism, the ancient Eastern philosophy, influences Asian descendants’ parenting style.
Secondly, we considered the achievement gap between Asian Americans and Caucasian Americans (Grissmer, 1994; Hsin & Xie, 2014; Kao, 1995; Konstantopoulos, 2009; Pang, Han, & Pang, 2011; Yong & Wei, 2009). The US media touts an achievement gap between white and African Americans and between white and Hispanic Americans (California Department of Education, 2010; Hemphill & Vanneman, 2011; Noguera, 2008; O’Donnell & Kirkner, 2014; Schott Foundation, 2010). Because of this, the general public tends to be more aware of these achievement gaps. Less media attention is given to the achievement gap we focus on, the gap between Asian Americans and Caucasian Americans. Asians outscore whites, especially in mathematics, science, and other technical areas (Pang, Han, & Pang, 2011; Peng & Wright, 1994). In the U.S., Asian American score higher on the SAT and ACT (Hsia, 1988; Hsin & Xie, 2014), and are overrepresented among winners of different prestigious scholarships, such as National Merit, US Presidential, and Westinghouse Science Talent Search Scholars (Flynn, 1991; Zhao & Qiu, 2009). Hildebrand, Phenice, Gray, & Hines (2008) indicated that Asian Americans have become the largest ethnic minority group in many career fields and at many elite colleges. In 2003, 51 percent of Asian American males and 44 percent of females age 25 and older had a bachelor’s degree or higher compared with 32 percent of non-Hispanic white males and 27 percent of non-Hispanic white females. In 1980, Asian Americans comprised only 1.5 percent of the population but Asian Americans consisted of 5 percent of all engineers and 8 percent of all doctors in the United States (Hildebrand, Phenice, Gray, & Hines, 2008). Similar trends occur in international data. The latest PISA (Program for International Student Assessment) survey, an international educational survey conducted every three years by the Organization for Economic Cooperation and Development (OECD) released in 2012, indicated the top five overall ranking were Asian students from Shanghai (China), Singapore, Hong Kong, Taiwan, and South Korea (Brown, 2013).

We would like to learn more about the following: Why do Asian students attain such high academic performance in mathematics, science, reading, and technical fields? Are their achievements related to Asians’ parenting style? Are they related to the age old Confucian philosophy that is part of the culture of Asians? In this conceptual paper, we will relate western parenting style literature and concepts involved in Confucianism to shed light on Asians’ high academic performance.

Parenting Styles: Theories and Literature

Based on Maccoby and Martin’s (1983) work, the two primary factors or dimensions to determine parenting style are responsiveness and demandingness. Parental responsiveness refers to the degree parents respond to the child’s needs. Parental demandingness or parental control is the degree of demands, control, or expectations parents have toward children (Maccoby & Martin, 1983). Analyzed by these two factors, 6 different types of parenting styles emerged. They are Authoritative, Authoritarian, Permissive, Ethnic Minority, Indifferent, and Inconsistent parenting styles (Baumrind, 1971; Maccoby & Martin, 1983). Since our purpose is looking at Asian parenting styles and achievement, we considered three of these: Authoritative because the literature indicates it leads to high achievement in children, and Ethnic Minority as a Subset of Authoritarian Style because that is the style most used by Asian families.

In this conceptual study, we focus on Authoritative, Authoritarian, and Ethnic Minority parenting styles and how they relate to children’s academic achievement. Based on the findings, the Authoritative style is
recognized as related to high achievement, while Authoritarian style relates to low achievement (Sung & Joohi, 2009). Ethnic Minority style is less often considered in the literature, and is considered a sub-set of Authoritarian parenting, but reached the public arena through Chua’s memoir (Baumrind, 1971; Baumrind, 1987; Chau, 2001; Chua, 2011, Fuligni & Tseng, 1999; Giarrusso, Du, Silverstein, & Bengtson, 2001; Heath, 2012; Hsai & Scanzoni, 1996; McLoyd & Smith, 2002; Shek & Chen, 1999).

In our analysis, we look primarily at the demandingness/control dimension as well as the extent parents support the interests of children for these two dimensions seem to be distinguishing dimensions between Ethnic minority and Authoritative parenting style.

With the Authoritative parenting style, the parent has reasonable control, uses reasoning with the children, is responsive to the children’s needs and interests, and is strongly related to high achieving children (Baumrind, 1971; Chau, 2001; Garg, Levin, Urajnik, & Kauppi, 2005; Heath, 2012; McLoyd & Smith, 2002; Steinberg & Levine, 1997). The Authoritarian parenting style emphasizes the hierarchical relationships between adults and children and uses this to maintain control, sometimes with forceful means, may restrict children’s autonomy, and is related to low achieving children. In terms of the responsiveness dimension, authoritarian parenting style is low in supporting children’s needs and interest.

The Ethnic Minority parent style as articulated by Heath (2012), is considered a sub-set of the Authoritarian style and is less prominent in the literature of parenting styles. However, we, the authors, realize that authoritarian style has a negative connotation in mainstream American culture. Additionally, we see the Ethnic Minority parenting style as a category of parenting style by itself because of the significant evidence of the exceptional high academic achievement among Asian children. Therefore, we would like to consider this parenting style as a separate entity. One of the goals of this conceptual study is to tease out how Ethnic Minority parenting style differs from the Authoritarian parenting style in the literature.

Ethnic Minority parenting style, at least in Asian American families, is related to high achievement as noted earlier as is Authoritative parenting style, which is clearly supported in the literature (Heath, 2012). This style differs from Authoritative style in that parents with Ethnic Minority style have high demandingness or control and do not place children’s interests as a priority.

Comparing Ethnic Minority style to strict Authoritarian parenting style, both styles are high in the dimension of demandingness or control. On the other hand, Ethnic Minority parenting style is differentiated from the Authoritarian parenting style in the high parents’ responsiveness toward children’s needs (Leung, Wong, Wong, & Chang, 2010). Even though Asian parents tend to be highly responsive to their children’s needs in relation to academic achievement issues, we speculate that Asian descendants tend to have a lower priority in supporting the child’s interest. If an Asian child wants to pursue an interest not perceived by the parent as viable, will the child be supported in participating in this interest? For example, Lulu, Chua’s younger daughter, wanted to learn tennis and she had to battle her mother in order to pursue this interest (Chua, 2011).

From this analysis, we come to the conclusion that parenting that is high in demandingness and high in responsiveness tends to produce high academic performance in children. Table 1 summarizes the above analysis of the literature showing how parenting styles relate to the factors of demandingness, responsiveness, interests and academic performance.
Table 1: Parenting style analysis

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<th>Parenting Styles</th>
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<td></td>
<td>Demandingness/ Control</td>
<td>Responsiveness to child’s needs</td>
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<td>Children’s Academic Performance</td>
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<td>Authoritative</td>
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<td>Authoritarian</td>
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<td>Ethnic Minority</td>
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Confucianism and Asian Families

Though Confucianism was developed in China, the philosophy has influenced many Asian descendants in other countries, such as Korea and Japan. Confucianism, developed by the greatest Chinese philosopher, Confucius, is a philosophy which focuses on the conduct and practices of people in daily life. For nearly 2,000 years, Confucianism has shaped the social, ethical and political aspect of Chinese and other cultures. It is a complex set of ethical and moral rules that dictate how a person relates to others and the world. The Confucianism philosophy and principles play a key role in forming the norms of social morality which influence the culture in personal, familial, and social relationships. Additionally, Confucianism has a significant influence on education and families’ educational practices (Huang & Gove, 2012). In the following, we will further explore the relationship between Confucianism and education at the societal and family levels, including education and social class, education as a family business, and the role of education in family hierarchy and family harmony.

Education and Social Class

Asian Education is associated with a person’s social class. In old Chinese society (770 BC to 1910’s), success is defined by one’s social class, not necessary by a person’s wealth (Huang & Gove, 2012; Lien, 2006). Social class is associated with occupations as well as the moral character related to the occupation. According to Confucius, out of four social strata which includes scholars (Shi), farmers (nong), workers (gong), and businessmen (Shang) based on occupation (Park & Chesla, 2007), the scholars strata is considered the highest class. Scholars did “mental labor,” and usually made decisions that influenced the whole society. Based on Confucianism, leaders needed to be intelligent, have high standards of ethics, and learn scholarly work (Tu, 1998). Therefore, scholarship was associated with high social class, leadership, and high moral character.

Today, Asian society and families still retain the idea that scholars belong to higher social class and education provides a route to reach the “scholarly” status (Huang & Gove, 2012). Highly educated people will become leaders and contribute to society. This value of education and social class influences the everyday life of Asian families. Many Asian descendants believe that educational success leads to a better life, including higher social status, getting a good job, or a better marriage and relationships (Cheon, 2006; Hildebrand, Phenice, Gray, & Hines, 2008; Louie, 2004; Lien, 2006). Therefore, education is central to most Asian families’ daily life. In fact, the various statistics indicated in the beginning of this paper is the evidence of educational emphasis within the family. Asian parents, such as Amy Chua (2011), place a high priority on educational success and that success is often measured by the test scores.
Asian Parenting Styles and Academic Achievement

Education as a Family Business

In the macrosystem level (Bronfenbrenner, 1979), Asian cultures value the collectivist ideology (Lu & Shih, 1997) which affects family functions and parent-child interaction. The family unit functions as a collective and de-emphasizes individualism which impacts on the daily practices, including education. Based on Confucianism, there are five basic human relationships: father-son, emperor-subject, husband-wife, elder-younger, and friend-friend. Three out of five bases of these relations occur in the family which indicates the importance of family interactions and relationships (Chang & Holt, 1991). Chinese cultures advocate that each individual should strive to expand the prosperity and vitality of one’s family (Lu & Shih, 1997; Miller & Yang, 1997). In other words, individual’s development and performance are to achieve the success of the family. Family, then, is in the center of an individual’s life and everyday existence, including educational practice.

Education is considered a family business, an interdependent process for many Asian families. Though children are responsible for their own educational success, Asian parents believe that their children’s educational achievement is greatly influenced by their parenting practices as well. They believe that they have the obligations and responsibilities to help build their children’s success in education (Huang & Gove, 2012).

Parents possess passion and zeal for their children’s education (Lien, 2006). Education is an intensive process, almost like a religious practice which affects the whole family’s daily interactions and routines. In Asian descendent families, a high priority is placed in any education related topics during daily activities and conversations. For example, parents may converse with their children concerning homework and test results as soon as children come home from school. In Chua’s case her daughters were not allowed to have playdates as they would interfere with their academic endeavors.

Asian parents are highly demanding and exert high control over children’s academic practice which relates to the dimension of the Ethnic Minority parenting style: high demandingness (Baumrind, 1971; Maccoby & Martin, 1983). During the daily parent-child interaction, parental involvement on academic practice is a focused and intense practice. The Asian family takes academic success seriously. If parents have a difficult time exerting influence over their children’s academic success, they may regard themselves as a failure as a parent and feel disappointed, anxious, and embarrassed (Kim, 2006). Asian parents hold themselves accountable for their children’s academic performance. They take their children’s academic failure as their own responsibility because they feel that they did not do their best to work with their children. Pressures can be high on both parents and children. Low achievement brings shame and embarrassment to the family (Chen, Miller, Wang, & Mark, 1996). On the other hand, if the child succeeds in academics, it represents the triumph of the entire family and is considered a family achievement, collective effort of the entire family. In Chua’s narrative, she drilled them on homework from school and on their music lessons, which she also deemed quite important to success.

The Role of Education in Family Hierarchy and Family Harmony

Asian cultures value family hierarchy and harmony which are central concepts in Confucianism (Huang & Gove, 2012; Leung, Wong, Wong, & Chang, 2010). The dimension of high demandingness within the Ethnic Minority parenting style is a reflection of these values (Leung, Wong, Wong, & Chang, 2010). Based on Confucianism, the family system has a clear and highly structured
hierarchy. Confucius’ doctrine distinctly stated the order: *Let the prince be a prince, the minister a minister, the father a father, and the son a son* (Kao, 2006). Each individual’s role and responsibilities are clearly defined (Huang & Gove, 2012). For example, one of the virtues of family hierarchy, filial piety, portrays the relationship between parent and child. Filial piety is an expression of respect from the child toward parent and elderly. In Confucianism, this virtue is associated with a person’s citizenship and leadership in the society. Asians believe that children who respect their parents will become good citizens and leaders (Terry, 2005). Therefore, filial piety is highly valued. In daily life, filial piety is reflected in children’s respect and obedience on parental demands and authority (Leung, Wong, Wong, & Chang, 2010). In most cases, children do not have many choices but to comply with parents’ expectations. Rebellion against parents’ authority is unacceptable and will result in harsh consequences. Being “unfilial” was considered a crime in the traditional Chinese society. As Terry (2005) indicated, it could result in death as a punishment. The virtue, filial piety, is interwoven with family’s educational practice on a daily basis.

Additionally, Confucianism promotes social harmony in human relationships, including family relationships (Chang & Holt, 1991; Leung, Wong, Wong, & Chang, 2010). To reach harmony within the context of family, it often relies on considering parent’s authority, conformity, and role and responsibilities of each individual (Lu & Shih, 1997; Miller & Yang, 1997). Thus, the decisions children make regarding education are associated with family harmony as well. Asian children learn more behavioral rules than Westerner children do. Asian children are comfortable following instructions (Moneta, 2004). Today, Asian parent’s authority can be observed in educational decision-making and behaviors in homework, exams, school selections, career choices, and so on (Huang & Gove, 2012).

Because of this emphasis on filial piety and harmony of the family, Asian families are able to demand academic excellence. However, Asian families tend to be less supportive of children’s social needs or other interests the children may want to pursue. As stated earlier, Lulu, Chua’s younger daughter, wanted to learn tennis and she had to battle her mother in order to pursue this interest (Chua, 2011). Yet once Lulu pursued her desire to play tennis, she drew from the discipline she had acquired by working with her mother on academics and playing classical musical instruments, so that she was successful at tennis also.

### Conclusion

Western parenting style literature emphasizes that the Authoritative style with its medium demandingness emphasizing reasoning and high responsiveness to both needs and interests leads to high achievement in children. However, Asian descendant families foster high academic achievement in children and their parenting style does not fit into the Authoritative style. It is considered in the category of Ethnic Minority parenting style in the literature. Thus, in our analysis, we looked at the demandingness/control dimension as well as the responsiveness dimension, the extent parents support the needs and interests of children. These two dimensions differentiate Ethnic Minority and Authoritative parenting style. Concerning issues relating to academic endeavors, we concluded that parenting with medium to high demandingness and high responsiveness is related to high academic achievement in children.

Further, we speculate that the high demandingness and responsiveness toward academics in Asian parenting style is influenced by values and philosophies of Confucianism embedded in the Asian culture. Confucianism places high value on education, filial piety, family hierarchy, and family harmony. These
are important family parenting traits that lead to the high academic achievement Asian descendant youth exhibit. These traits are reflected in the parenting style literature (Ethnic Minority parenting style) as high demandingness and high responsiveness especially toward concerns related to school and education. We further speculate, as Amy Chua’s parenting illustrates (Chua, 2011), this kind of parenting tends to develop self-discipline in the children over time. This area needs to be explored further in the literature.

We have reached three conclusions in this conceptual paper. First, the Ethnic Minority parenting style needs to be more prominent in the parenting style literature and more research needs to be conducted concerning this style, particularly with Asian descendants. Second, in light of the fact that Asian descendants tend to excel in academic arenas, we believe that Asian parenting style needs to be singled out and examined with an in-depth look at its relationship with children’s academic performance. Third, Confucianism as a belief system which is part of the heritage of Asian descendants, especially its emphasis on education and family dynamics, seems to foster the high achievements of children. This impact of Confucianism on Asian descendants parenting style, needs to be further explored.

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