

## **Critical Thinking and E-Learning in Social Work Education**

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### **Abstract**

*The following literature review and critique is an exploration of critical thinking in on-line social work education. Social work has been torn between the benefits and limitations of on-line education and has fallen behind other disciplines in the use of on-line education. On-line education has numerous benefits and when used appropriately can serve several important outcomes. Critical thinking can be enhanced in social work education by the use of on-line pedagogical processes. This article reviews the literature to offer definitions of critical thinking in the social work profession, define models of teaching critical thinking in an on-line environment, and provide recommendations for future research and application. The intent is to encourage an open mind in the use of on-line platforms for teaching certain competencies in social work.*

### **Introduction**

Buzducea (2010) acknowledges several key developments in recent years that are having a profound effect on the social work profession and education. Social work practice has always involved a complex social systems perspective that requires social workers to be on the interface of individual, family, group, community, cultural, and now global systems. The introduction of technology for communication, information exchange, and education is a new force in the social work profession and social work education. Global trends of shifting demographics, labor markets, and migration/immigration movements are impacted and sometimes caused by huge advancements in technology (Buzducea, 2010). Social work students need to be prepared to practice in a technologically global context and think critically about what this context involves. Social work education needs to acknowledge and incorporate new areas for education with an emphasis on e-learning modalities, e-communication, and rethinking how to deliver education while maintaining an emphasis on critical thinking. The modern world has created many new foci for social workers to address. Based on a review of the research literature, the premise of this paper is to illustrate that critical thinking in social work education can be effectively taught on-line if specific course pedagogies and critical thinking elements are present.

### **Historical Implications and Contemporary Mandates**

Colby (2009) highlights how the traditional focus in social work education of providing information in a passive environment is no longer sufficient for meeting outcome competencies related to critical thinking. Students need to develop the abilities to seek out information, examine evidence, and make effective decisions in electronic environments that are then applied to in-person practice situations. The shift from merely delivering curriculum content to developing competencies requires that social work programs measure student's ability to think critically as professional social workers (Colby, 2009). The Council on Social Work Education is the accrediting organization for undergraduate and graduate social work education in the United States. The Educational Policy and Accreditation Standards (EPAS) outline ten competencies and 42 practice behaviors to guide curriculum design and outcome assessment in social work education. EPAS 2.1.3 is relevant as it considers competency for critical thinking outcomes.

According to EPAS, a critical thinking competency is considered "the ability to apply critical thinking to inform and communicate professional judgments, while utilizing creativity, scientific inquiry, and reasoned discernment" (p. 4). Within this competency students are expected to be able to demonstrate effective oral and written communication at multisystem levels; analyze and evaluate assessment models, interventions, practice modalities; and distinguish, appraise, and integrate multiple sources of knowledge. The Council on Social Work Education's definition of generalist practice includes... "identifies with social work profession and applies ethical principles and critical thinking in practice" (p. 8). Under assessment guideline E.P. 4.0.critical thinking needs to be evaluated to the extent that students are using findings to improve practice.

Multiple methods of assessment are to be utilized with each practice competency (Council on Social Work Education, 2008). A major concern with the CSWE EPAS critical thinking requirement is that the 2008 EPAS require programs to measure critical thinking outcomes but do not offer a valid and reliable way to measure the construct (Miller, Hall, & Tice, 2009). The Council on Social Work Education Committee on Research and Instructional Technology completed a survey of 501 social work BSW and MSW programs to determine the use of distance education in social work programs. A 27% response rate indicated that almost all of the programs were either using some form of distance education or planning to implement distance education in the near future. The limitation with response rate and sample bias is very clear. Programs already doing distance education or planning to implement distance learning were more likely to respond. Responses to the survey were divided into schools currently offering on-line programs, those with courses in development, those considering development, and those not considering. Extrapolating the responses to the population of programs it was determined that 4/10 BSW programs and 5/10 MSW programs are offering on-line courses. Most on-line course offerings were for electives but a surprising number of schools (primarily masters) were offering practice courses on-line. This is a major difference from ten years ago when policy and research courses were the primary offerings on-line. The majority of institutions surveyed indicated that pressure is coming from administration to offer programs and courses on-line (Vernon et.al. 2009). The following literature review indicates similar learning outcomes between distance education and face to face courses with specific course areas (Vernon et.al, 2009).

### **Nature of Critical Thinking and Definitions**

Critical thinking is difficult to define and even more difficult to measure (Abrami, et.al, 2008). A definition of critical thinking from EPAS states “critical thinking is self directed thinking and a self monitored process that requires effective problem solving abilities” (p. 4, as cited in Colby, 2009). Critical thinking includes the ability to analyze and evaluate one’s own thinking processes. Huff (2000) provides several definitions of critical thinking and emphasizes the relevance of critical thinking in social work education. The premise is that good critical thinking is not an innate or natural ability for most students but that they can be taught through effective pedagogical methods to learn to think critically. Students need the ability to question, reason, and consider alternative perspectives but also to evaluate their own biases, values, claims, and belief systems (Huff, 2000).

Mumm and Kersting (1997) identify more variations of critical thinking. Connections between critical thinking and social work practice include the ability to evaluate theory and interventions. Critical thinking is a necessary component when multiple options exist in problem solving and facts need to be evaluated. Understanding how theory informs practice is a function of critical thinking (Mumm & Kersting, 1997). Social work educators need to teach students how to think critically and how to think as social workers. Solving ethical dilemmas, evaluating research findings, developing arguments, clarifying definitions and directions, and organizing and creating new knowledge are functions of social work practice that require critical thinking.

Madock –Jones and Parrott (2005) state that the importance of critical thinking cannot be underestimated due to the fact that critical and informed decision-making is a requirement when making decisions that will affect other’s lives. Paul (2007) states that critical thinking helps expand the context of any discipline. It requires a person to think about thinking. “Critical thinking is thinking that analyzes thought, that assesses thought, and that transforms thought for the better” (Paul, 2007, para 3).

The Delphi Committee of the American Philosophical Association’s Delphi panel describes critical thinking as the ability to engage in purposeful, self regulated judgment (Facione, 1990 as cited in Abrami, Bernar, Borokhovski, Wade, Surkes, Tamin, & Zhang, 2008). Ideal critical thinkers are first and foremost inquisitive, informed, open minded, fair, realistic about bias, and careful in making judgments (Abrami, et.al, 2008). Critical thinking consists of specific skills as opposed to psychological attributes. Critical thinking skills can be transferable across contexts although there is debate on how to teach skills (generalist or specifist perspective) (Abrami, et.al, 2008).

Gibbons and Gray outlined the following qualities and characteristics of critical thinking specifically for social workers (2004):

- An ability to reject standardized formats for problem solving.
- Interest in a wide range of diverse topics and fields with an ability to consider them together.
- Ability to formulate multiple perspectives on a problem or issue.
- Develop a contextual and relativistic world view.

- Frequent use of trial and error.
- Operating from a future orientation without ignoring past or historical contexts.
- Develop a self confidence and trust in personal judgment that can then be supported by outside information (Gibbons & Gray, 2004).

Acritical thinker in social work practice will then synthesize, compare, evaluate, and encourage the uprooting of deep held assumptions, values and beliefs. All of the above requires an evaluative view of situations and contexts that reach beyond the immediate situation at hand because critical thinking is more than just a problem solving process (Gibbons & Gray, 2004). Central to the process is the ability to be creative and deal with ambiguities. Critical thinking is just as much about with the world from an intuitive standpoint as it is about disciplined thought and evaluation processes (Gibbons & Gray, 2004).

### **Faculty Issues**

When it comes to teaching critical thinking in online modalities training for faculty cannot be overlooked (Salmon, 2005). There is often high resistance to change among faculty. Institutions need to be proactive and prepared to address the potential resistance. Knowles (2007) states that institutions need to acknowledge faculty work load and development needs. Well designed instruction allows students to transfer critical thinking skills across disciplinary constructs (Abrami, et.al, 2008). The aim for faculty teaching critical thinking is to ultimately create a stronger citizen and contributing member of society who can think through difficult and complex scenarios. This is almost impossible to measure so instead there is an attempt to address how the impact of the faculty member affects critical thinking in students in their courses (Abrami, et.al, 2008). In their meta analysis of teaching critical thinking Abrami, et. al. determined that instructor training was significantly related to higher levels of critical thinking outcomes (Abrami, et.al, 2008). This significance level held steady even when comparing other faculty parameters such as extensive observation, detailed curriculum descriptions, and articulating critical thinking as course outcomes (Abrami, et.al, 2008). In other words- faculty matter and the approaches faculty use to teach critical thinking affect the outcomes.

Bullen (1998) found that when faculty were less engaged in the online courseroom critical thinking levels went down. Bullen utilized case study methodology to study online critical thinking outcomes and participation in university level distance education (1998). The study (n=18) utilized quantitative and qualitative analysis of several variables which were coded for evidence of critical thinking or no critical thinking. Content analysis of transcripts from online discussions indicated that students tended to participate at higher levels of critical thinking when the instructor was present at least every three days in the courseroom (Bullen, 1998). As the instructor spaced out presence beyond three days the quality of critical thinking went down. Limitations to Bullen's study include the case study method which is not generalizable and small sample size. Coding also presents a validity issue with researchers utilizing their own definitions for coding transcripts. Instructors need to make instructions very explicit for online participation in order to foster critical thinking (Abrami, et al, 2008; Bullen, 1998). Using specific scenarios with directive response instructions aided students in being able to work through a critical thinking process (Bullen, 1998; Oterholm, 2009). The instructor in an on-line learning environment then needs to keep students focused so the critical thinking process does not become too divergent (MacDonald & Thompson, 2006).

Schoech (2000) found that instructor variables were central in on-line teaching. Schoech utilized a one-group pre-experimental method to study on-line teaching in a doctorate level social work course. Schoech compared an on-line doctorate course to face-to-face doctorate level courses and determined that the e-learning environment was just as rich as a face-to-face classroom and faculty variables were one factor. It was determined that the instructor needs more advance preparation and time in order to be regularly present in the on-line courseroom. Questions need to be very specific and post/reply instructions explicit in order to foster critical thinking (Schoech, 2000). Limitations with one-group pre-experimental designs include lack of internal and external validity (Royse, 2008). Schoech utilized a non-standardized self designed scale " Student Attributes Towards Web-Based Instruction" which limits reliability and validity as well (Royse, 2008). Knowles (2007) identified issues of faculty engagement in on-line learning in a study of 30 interviews with social work educators and administrators. Social work educators were between 40-60 years old with 10-20 years of teaching experience. Qualitative analysis from interview coding indicated that faculty engagement issues consisted of workload, pedagogical interests, choice, dialog, and faculty development (Knowles, 2007). Findings supported that critical thinking in e-learning involves creating a community of inquiry, social presence, cognitive presence, and instructor presence.

Faculty development was especially critical. Faculty need training in course design and e-learning pedagogies in order to teach effectively on-line (Knowles, 2007). Training future social workers will require social work educators to become familiar with communication technologies and e-learning modalities while at the same time remaining true to the history, purpose and functions of social work (Buzducea, 2010).

### **Critical Thinking Pedagogy and Measurement Comparisons of Face to Face with Online or Technology Classes**

Huff (2000) used pre-test/post test comparison group (quasi experimental) design to determine whether there were significant differences in student's critical thinking outcomes between a television delivered class and a traditional face to face class of MSW students. While the television technology has now been replaced by internet and on-line learning environments the study contains some important insights in teaching critical thinking via technology environments. Huff utilized the California Critical Thinking Skills test for the measure (N= 73 with 38 students in the distance education class and 24 in person) (2000). T-tests, manova, and ancova testing was used to support several hypotheses (2000). Even after controlling for extraneous variables there was no significant difference between the distance education course and the face to face course. Limitations in Huff's study include lack of generalizability and small sample size (Huff, 2000). Huff concluded that the best way to teach and learn critical thinking in social work is through analysis of a specific situation (2000). According to this study distance learning was as effective as face to face learning for critical thinking (Huff, 2000).

Coe and Elliot (1998) evaluated direct practice vs. on-line distance education courses for teaching social work in rural areas. A survey of 30 on-campus and 47 distance education learners measured student characteristics, classroom interaction, and CSWE outcomes for accreditation. Similar assignments were provided in both formats. Distance education learners had significantly more practice experience than on-campus learners which may account for their ability to manage the distance education platform (Coe & Elliot, 1998). Findings concluded that the distance students and on-campus students had similar outcomes for accreditation standards but that distance students missed face to face socialization. This did not impact success with course outcomes however (Coe & Elliot, 1998). Coe and Elliot's study was limited by not presenting how critical thinking practice skills were taught. The study was post- test only comparison group with no random assignment and non-equivalent groups. Instructors also varied and instructor variables were not measured. Instrument reliability was not tested (Coe & Elliot, 1998).

Quasi experimental pre test/post test comparison group design was used to determine if removing face-to-face hours in a foundation social work Master's level research course would negatively impact course learning outcomes (Banks & Faul, 2007). Eleven students comprised the comparison group which consisted of students in a face to face class, and 18 students were in the experimental group which was a blended on-line/face to face class. The measure consisted of a 15 item multiple choice knowledge test. Non-parametric statistical analysis was utilized due to small group sizes. Findings statistically supported the hypothesis that there would be no significant difference in learning outcomes between the two groups (Banks & Faul, 2007). In fact, both groups showed statistically significant increases in learning outcomes. Additional findings did indicate that younger students in the class, with less social work practice experience were less satisfied with the blended course format than students with more experience. Limitations are not generalizable due to lack of random assignment to groups. The study is also biased due to students self selecting into the experimental or comparison group. Students with stronger on-line skills may be more likely to self select the blended course offering over a face to face class (Banks & Faul, 2007). The findings support that learner characteristics may play a larger part in learning outcomes than the venue the course is offered (Banks & Faul, 2007).

### **Online Only Classes**

Knowles (2007) identified pedagogy themes in teaching critical thinking on-line in social work. Knowles' themes illustrate mechanisms that are required in order to effectively teach critical thinking online for social work education (2007). Transformation involved the processes that social work educators and practitioners undergo in order to adapt to teaching in e-learning environments. Transformation involves re-thinking goals, developing new teaching methods, and the need to develop policies that are course specific to the e-learning environment (Knowles, 2007). Alignment involved dealing with philosophical aligning of social work ethics (e.g. confidentiality), aligning discussion to asynchronous time frames, creating interaction to promote critical thinking, and clarifying roles (Knowles, 2007).

Coherence included finding congruence with the mission of social work, professional development and socialization of students as social workers, program standing, and organizational goals, policies and resources (Knowles, 2007). Mac Donald and Thompson (2006) used case study methodology with multiple methods to evaluate the structure, content, delivery, service, and outcomes for teaching on-line courses in higher education. Qualitative data analysis of findings from one graduate level course utilized a constructivist framework were analyzed. The framework assumed learning is active, situated, and social. According to their findings many on-line learners are doubtful in the beginning (2006). Courses with good beginnings will have introductions, social ambiance, and organization. Setting up small groups can help alleviate pressure of responding to all discussion postings. Not everyone slides into on-line learning easily. There needs to be a sense of progression and orientations are critical (MacDonald & Thompson, 2006). The discipline specific content needs sufficient depth and breadth in order to facilitate critical thinking. It is important for learners to identify with a common focal point and engage from there to more fully develop the discussion and analysis.

A literature review addressing the interactivity and responsivity of e-learning environments determined that e-learning modalities are ideal for teaching social work (Madoc-Jones and Parrott, 2005). The authors provide an overview of what e-learning is and conditions for e-learning to be successful in social work education. The premise is that new pedagogical approaches are necessary for effective teaching in social work, as opposed to merely transferring the classroom pedagogies to a virtual learning environment (VLE) (Madoc-Jones & Parrott, 2005). Madoc-Jones and Parrott (2005) acknowledge that a post modern learning philosophy is recognized as an important theoretical framework to guide the design and delivery of e-learning environments. Social worker educators need to develop discursive strategies to facilitate critical thinking in VLEs. Creating an interactive community is crucial in VLEs and must be structured in order to develop critical thinking skills (Madoc-Jones & Parrott, 2005). The authors stipulate that it is not the VLE that creates successful creative thinking in education, rather it is how the instructor utilizes the VLE. Madoc-Jones and Parrott conclude based on the literature review that e-learning is at least as effective as face to face learning for social work and more effective in specific areas such as teaching and learning critical thinking, inquiry, and encouraging engagement by all students (2005).

Mumm and Kersting (1997) outline a process for teaching critical thinking which includes a description of specific situations, use of theory to increase understanding of the situation, followed by questioning the application of the theory according to strengths and limitations. Students need to articulate their rationale for the process. Mumm and Kersting (1997) used a pretest/posttest methodology in a practice course to determine the student's ability to think critically by labeling and defining relevant theory, evaluating the theoretical framework, clearly explaining the rationale, examining personal assumptions, and describing dilemmas. From this process they determined that in order to be effective, critical thinking involves a time element (Mumm & Kersting, 1997). Exploring alternatives and formulating a response requires a concerted, careful approach. Students may need assistance in developing higher order critical thinking skills to avoid jumping to conclusions (Mumm & Kersting, 1997).

Otterholm (2009) evaluated which kinds of teaching activities worked best to enhance critical thinking competencies in an on-line environment. Otterholm used critical incidents (a specific experience from a student situation) as the basis for evaluating critical thinking processes. Students were required to use evidence to support claims and critique the evidence as it relates to a critical incident. He employed a sociocultural perspective of learning for developing questions (Otterholm, 2009). According to the sociocultural perspective of learning, learning is understood as an active, cognitive process that occurs via interaction with others and the environment. To be effective, e-learning classroom environments must foster this interaction and provide opportunities for critical reflection (Otterholm, 2009). Findings from the study highlight the benefits of critical thinking in the on-line environment which included everyone having a voice, the opportunity to reflect and research responses, engagement with the instructor and other learners, and responding critically to questions (Oterholm, 2009).

MacDonald and Thompson assessed structure, content, delivery, and service outcomes for a doctorate level education class with 19 learners through case study method (2006). Semi structured interviews and course data, along with an on-line likert scale survey provided data for analysis. MacDonald and Thompson (2006) indicated quality and design in e-learning is often compromised when programs attempt to put courses on-line quickly. Compromising design and preparation significantly affects learning outcomes for on-line courses. Content in on-line courses needs to be comprehensive, authentic, discipline driven, and researched (MacDonald & Thompson, 2006).

## **Meta Analysis of Critical Thinking**

One of the most extensive reviews of critical thinking pedagogy was completed by Abrami et.al (2008) with a meta analysis of 117 studies between 1960-2005 on teaching and learning critical thinking. In their meta-analysis authors reviewed definitions, measurement issues, and pedagogies for teaching critical thinking. Multiple methods of statistical analysis were used to determine how critical thinking is measured and taught with an emphasis on effect sizes and research methodology. Because there is such a variety of ways to measure critical thinking and research designs the study coded for variations on research methodology and measurement (Abrami et.al, 2008). Findings determined that mixed instruction method approaches to teaching critical thinking outperform general, infusion, and immersion methods. Mixed instruction methods involve teaching critical thinking as an independent track within a specific subject course. Critical thinking outcomes are explicitly stated in course outcomes (Abrami, et.al , 2008). When it comes to faculty issues (previously discussed) significant differences and positive effect sizes were present for instructor training (Abrami, et.al, 2008). An interesting finding in the meta analysis was that collaborative learning conditions (group projects, etc.) had very minor effect sizes in enhancing critical thinking abilities.

This finding has implications for on-line learning in that group work on-line may be more cumbersome than helpful for developing critical thinking skills. Limitations on the meta analysis with pedagogy includes the age range and multiple levels of education (elementary to doctorate) (Abrami, et. al, 2008). In addition, limitations with the meta analysis for this literature review are that the studies reviewed are based on face to face courses. Macy, Rooney, Hollister, and Freddolino (2001) completed a literature review of distance education in social work. Based on the outcomes of the literature review they determined that on-line learning is as effective as face to face learning in certain areas- mainly critical thinking, reflective thinking, problem solving, and student interaction. Macy, Rooney, Hollister, and Freddolino suggest that it is time to stop comparing on-line learning with face to face learning and instead focus on what makes on-line learning successful for different competencies such as critical thinking (2001). Limitations in the social work literature about critical thinking and on-line venues reviewed thus far include lack of consistency in measurement, numerous studies at the pre-experimental and quasi experimental level, and lack of information on how faculty and student issues impact on-line learning (Macy, Rooney, Hollister, &Freddolino, 2001).

## **Measuring Critical Thinking**

Huff's study (2000) utilized the California Critical Thinking Skills test to measure critical thinking. There are a number of different ways to measure critical thinking from using standardized scales to instructor and researcher designed scales, to qualitative analysis (Abrami, et.al 2008). Measuring critical thinking is necessary if we are to determine how effective it can be taught and learned. Popular standardized measures include the Watson-Glaser Critical Thinking Appraisal, Cornell Critical Thinking Test, California Critical Thinking Skills Test, and the California Critical Thinking Disposition Inventory. Even standardized measures have limitations. Standardized measures show inconsistencies when analyzed in meta analysis (Abrami, et.al 2008). Miller, Hall, and Tice (2009) turned to the Watson-Glaser Critical Thinking Appraisal (WGCTA) to operationalize critical thinking in their study of critical thinking skills in social work policy course. Using matched pre-test, post-test design with 124 students (convenience sample) over a two-year period Miller, Hall and Tice found no significant differences on the WGCTA test between pre and post tests (2009). Findings again, point out some of the limitations with standardized instruments (Abrami, et. al 2008). There were significant differences on the pre and post tests once race/ethnicity variables were considered which indicates future study on the impact of race/ethnicity with critical thinking (Miller, Hall, & Tice, 2009). The authors point out that there are major issues with attempting to measure critical thinking in social work which corroborates with Abrami, et.al findings (Miller, Hall, & Tice, 2009).

## **Student Issues**

Student factors in on-line learning and critical thinking are a pertinent area for further exploration. Research to date is indicating that certain kinds of students do better with certain kinds of learning activities. Younger students may not fully grasp the concept of critical thinking – even in a face to face class (Macy, Rooney, Hollister, &Freddolino, 2001). Moving a traditional face-to -face course online will require that student factors be addressed. Some evidence is indicating that students with lower grade point averages do better in face-to-face classes (Macy, Rooney, Hollister &Freddolino, 2001).

Students who are used to a passive educational experience may have difficulty transitioning to the more self-directed, active mode of online learning that is required in critical thinking (Banks & Faul, 2007). Younger students with less experience maybe more vulnerable in an online class and not as driven to participate in the dialog and questioning required of critical thinking processes, however, the student profile is changing. In 1970 28% of undergraduate students were aged 24 or older. By 1980 this had grown to 37% and by 1999-2000 24 year or older students comprised 43% of undergraduate post secondary education (Banks & Faul, 2007). Today's students enthusiastically embrace technology, yet may need direction in how to develop critical thinking processes via the use of technology (Frey, Faul, and Yankelov, 2003). Wolfson, Magnuson, and Marson (2005) found that some students felt the on-line environment was not conducive to their learning style and students wanted the opportunity to meet face to face with their classmates for socialization. MacDonald and Thompson found that many learners expressed dislike with not being able to see nonverbals of classmates (2006).

These limitations can be remedied by creating a spirit of reciprocity, mutual engagement, and sense of community (MacDonald Thompson, 2006). Oterholm found similar sentiments in his study of on-line learning vs. face to face learning (2009). Disadvantages of teaching critical thinking on-line were that students missed the face to face interaction, lack of spontaneity to discussion, and expressed difficulty following threads with unregulated discussions and synchronous chat (Oterholm, 2009). Frey, Faul, & Yankelov (2003) found that students disliked on-line quizzes due to time out issues and problems with technology, and lack of socialization. Authors indicated that socialization can occur in web learning environments with the appropriate techniques (Frey, Faul, & Yankelov, 2003). Frey, Faul, and Yankelov's study (2003) highlighted that the most useful components of web instruction perceived by students were regular communication with instructor and learners, posting grades on line, ability to submit and retrieve documents on-line, among other varieties of approaches. Frey, Faul, and Yaneklov (2003) found significant correlation between higher level of comfort with computers and likeability of web-based strategies. Successful e-learning approaches for developing critical thinking must include assessing student's access to the course site and motivation, on-line socialization opportunities, information exchange, knowledge construction, and knowledge development (Salmon, 2005 as cited in Oterholm, 2009).

### **Barriers and Challenges to E-Learning in Social Work Education**

A significant barrier to teaching critical thinking in social work on-line involves helping social work educators make the transition to on-line pedagogy while staying true to the mission of social work (Banks & Faul, 2007). Faculty concerns and variables need much more exploration (Macy, Rooney, Hollister, & Freddolino, 2001). Doubts still persist among many social work educators that social work can be taught in a distance format or with technology (Woehle & Quinn, 2009). Challenges of e-learning and teaching include keeping current in an ever changing array of technological innovation, producing learning materials for use on-line, shifting pedagogical approaches for on-line, and dealing with the bias in social work education about e-learning (Waldman & Rafferty, 2008).

The social work education field and practice environment is torn by acknowledging the benefits of technology and the limitations. Obstacles to on-line education in social work included students and faculty needing to adopt new roles, discovering collaborative learning practices to foster critical thinking, overcoming technical access problems, financial outlay for equipment, and using educational designs that have not kept pace with technology (Maidment, 2005). Maidment acknowledges that social work needs to do more research to determine whether or not inclusive inquiry can be effectively taught on-line to develop critical thinking competencies (2005). Controversies and opportunities that are facing social work education today include the need to revise social work education and training and reduce the emphasis on traditional teaching modalities (Buzducea, 2010). Strategies to address challenges include lobbying universities for increased resources, collaborating with other programs, encouraging educational software development for social work, and developing e-learning networks for faculty support (Knowles, 2007).

### **Strengths and Opportunities of E-Learning in Social Work Education**

Benefits to on-line instruction include respect of student's time commitments, quieter students participate more, and students stating they have to keep up on the reading for substantive discussion (Wolfson, Magnuson, & Marson, 2005). According to Abrami, et.al (2008) on-line learning has demonstrated similar effectiveness with face to face so that the opportunities are outweighing the drawbacks. Critical and reflective processes are particularly well suited to an on-line pedagogy (Bellefeuille, 2006). The on-line environment is adaptable for use with an objectivist and constructivist approach to teaching critical thinking (Bellefeuille, 2006).

Students are able to self pace their learning and have time to compose reflective responses in asynchronous discussions. Students are able to access an unlimited source of information and resources via the web, and can expose their ideas to a wider audience. At the same time students can reflect and build on their knowledge based on other student's input – a key component of the critical thinking process (Bellefeuille, 2006). Vernon et.al. (2009) considered issues of technology support, workload, faculty development and course development. Asynchronous platforms are preferred over synchronous platforms. The benefits of reaching isolated students are considered a hallmark of on-line education in social work. On-line social work education can reach students previously closed off to higher education due to geography or family /work responsibilities (Vernon et.al. 2009). Providing field seminars to students who may be in distant field placements may be especially beneficial to fostering critical and reflective thinking around practice situations (Wolfson, Magnuson, & Marsom, 2005).

MacDonald and Thompson (2006) found that students appreciate the ability to submit assignments on-line and flexible study time. The convenience outweighs many drawbacks for students. On-line discussions that are structured and required are more effective than in-person discussions for enhancing critical thinking (MacDonald & Thompson, 2006).

Themes to explore in the future include the digital divide (not just globally, but also between students and practitioners), power differentials between who has access to technology and who doesn't, and the empowering elements of on-line access (Maidment, 2005). Future concerns involve ethical issues with confidentiality in an on-line environment (Waldman and Rafferty, 2008). Whebi (2009) states that as a response, social work educators need to increasingly focus on developing critical thinking competencies and reflective skills in students. If we adopt the International Federation of Social Work definition of generalist social work practice we will need to produce social work graduates who are capable of reflecting on their work in the profession and guiding the profession to international prominence. Traditionally the applied disciplines have been devalued in higher education (Whebi, 2009). Increasing student's use of critical thinking models, evidence based practice, and scientific method in social work on-line education can help move social work towards greater acceptance as a rigorous discipline in academia.

### **Research and Literature Analysis**

According to Frey, Faul, and Yankelov (2003) research is needed to convince the Council on Social Work Education that e-learning can be an effective way to meet outcomes in social work education. Measuring the critical thinking and pedagogy in on-line environments still contains numerous methodological issues in regards to validity and reliability (Abrami, et.al, 2008). There is a bias in the extant research reviewed to date with students self selecting into on-line courses. These students most likely have stronger computer skills and more advanced critical thinking and self directed skill sets (Banks & Faul, 2007). Research needs to also include qualitative aspects of teaching/learning critical thinking. How do students define critical thinking and what are their personal learning experiences like with on-line learning in social work education? This question has not been well addressed in the literature (Abrami, et.al, 2008; Macy, Rooney, Hollister, & Freddolino, 2001).

The current research is comprised mainly of exploratory, pre-experimental studies based on multiple definitions of critical thinking, multiple measures, and varied means of evaluating outcomes. While Abrami et.al (2008) provide a strong meta analysis of critical thinking pedagogy their meta-analysis is limited because it includes studies from elementary through higher education and an age range down to age six and does not focus exclusively on e-learning (Abrami, et. al 2008). Sampling methodology in the studies reviewed for this paper included mostly convenience samples from the researcher's own courses or known instructor's students who agreed to participate. Convenience sampling is considered a non-probability sampling method which could have significant levels of sampling error (Royse, 2008).

Sample sizes in most of the studies were also quite small, usually no more than 50 students between two classes. The majority of comparisons that were made were done with independent sample t-tests due to the unmatched groups between classes. Due to the fact that the sampling procedures were non-probability, the findings from the studies reviewed cannot be generalized to a broader population from which the sample was drawn (Fischer, 2000). A series of randomized, experimental studies would be very beneficial to the existing body of literature on critical thinking and on-line learning. Response rates should be examined carefully in studies which used survey methods for data collection (Fischer, 2000).

Even if a response rate “appears” strong, the response rate compared to the entire sample, then extrapolated to the population is needed to determine the extent of sampling error (Fisher, 2000; Royse, 2008). Most of the studies reviewed had good response rates to data collection primarily because the sample population were students in current classes and readily available and willing to participate in the research process. This leads to the question of reactivity effects (Royse, 2008). Were the students swayed by the process of being part of a research study on critical thinking and therefore “trying harder” than they might in a class where research is not going on? The Code of Ethics requires informed consent by research participants but it needs to be acknowledged that this could lead to a “Hawthorne Effect” whereby students are changing their behavior because they are aware of being studied (NASW, 2008; Royse, 2008, p. 244).

Measurement for operationalizing critical thinking is far from standardized (Abrami, et. al, 2008; Gibbons & Gray, 2004). Each study reviewed utilized a slightly different measure or self designed measures. A few of the studies utilized standardized measures such as those mentioned previously (California Critical Thinking Skills Test, Watson-Glaser Critical Thinking Appraisal, etc.) however even the standardized tests have been shown to have increased validity issues in certain cultural and social contexts (Abrami et.al, 2008). Meta analysis can help increase validity slightly but does not determine which measure or measures within the meta analysis may show higher levels of consistency over different social contexts and cultures (Abrami,et.al, 2008).

### ***Conclusion and Impact on Undergraduate Social Work Education***

There is a need for more research specifically on teaching and learning critical thinking in social work education (Banks & Faul, 2007; Macy, Rooney, Hollister & Freddolino, 2001; Miller, Hall, & Tice, 2009). Implications for social work education are significant as more programs and classes are being offered in an on-line environment. Students and teachers will need to examine effective methods for obtaining this core competency in an on-line environment if social work education is to be successful in educating future social workers who can think critically about practice, assessments, interventions, environments, clients, and global social /political issues. Social work has had a strong history in higher education over the past 100 years and the number of programs continues to grow (Colby, 2009). Social work education is found in over 80 nations and there are 1.1 million social workers in the world (Colby, 2009). How we continue to educate social workers for the future has profound implications for the profession and the vulnerable populations served by social workers.

Traditionally the focus in social work education has been on providing information to students about the profession. This is no longer sufficient (CSWE, 2008). Students now need to demonstrate competencies such as critical thinking and develop and demonstrate knowledge based on synthesis, inquiry, reflection, and problem solving- all of which are components of critical thinking (Colby, 2009; CSWE, 2008). Shifting our approaches for teaching in an age of new technologies will be key to developing competencies for students (Oterholm, 2009). Social work needs to replace, enhance, and transform pedagogy for on-line learning (Waldman & Rafferty, 2008). A constructivist, postmodern learning and teaching perspective is needed for online education and critical thinking. Students and faculty will need assistance in making the shifts to these approaches (Madoc-Jones & Parrott (2005). The decisions made by social workers affect many; great care, process, reflection, and integrity needs to go into the critical thinking process that informs decision making. Training students to “think” like a social worker is going to take new approaches in an on-line environment in order to be successful (Madoc-Jones & Parrott, 2005).

Technology offers many benefits to fostering critical thinking in social work. Technology helps to expand the reach of social work education, provide consistency in curriculum and approaches, encourages interactive communication when facilitated effectively, and creates an active, reflective learning environment (Banks & Faul, 2007). Utilizing multiple methods to engage students and develop critical thinking in the online environment can help move social work education towards accomplishing the CSWE competency (Bellefeuille, 2006). The challenge in on-line social work education is to achieve the EPAS critical thinking competencies and assess student learning to meet the competencies. Key to enhancing and evaluating e-learning and critical thinking is knowledge of e-learning processes. Students and faculty must have fast, dependable access to adequate technology in order to facilitate e-learning. Both parties need to have intrinsic capacities for time management, motivation to access the course site, the desire to learn, and ability to communicate effectively in writing (Oterholm, 2009). Fostering the critical thinking process requires the teacher and students to be actively engaged in the on-line classroom. In order to facilitate critical thinking and knowledge construction the direct experience of students needs to be connected to didactic content and new knowledge.

Students need to critically question and engage in dialog around a specific situation while integrating material on relevant theories, practice approaches, and evidence (Oterholm, 2009). The instructor role is to provide additional learning material for the students to engage in a process of learning from each other and new knowledge development (Oterholm, 2009; Salmon, 2005). Social work practitioners who become teachers must shift their approaches to develop effective pedagogical approaches in order to help students achieve the core competency of critical thinking (Wehbi, 2009). As educators, social workers can utilize the on-line environment effectively to encourage critical and reflective thinking. Assessment of these activities becomes key to determining if on-line pedagogies are effective for teaching and learning critical thinking. Evaluating techniques for teaching critical and reflective thinking in an on-line environment provide evidence that the on-line environment can be used effectively to teach critical thinking to social work students yet more evidence is needed (Abrami et.al,2008; Huff, 2000; Maidment, 2005; Oterholm, 2009; Wehbi, 2009). Social work education can benefit by examining evidence from on-line social work education experiences with teaching critical thinking as a way to enhance their student's acquisition of critical thinking competencies and practice behaviors.

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