The Journal of Effective Teaching

JET

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CALL FOR PAPERS

The Journal of Effective Teaching is accepting submissions for review for the Fall 2015 issue. Manuscripts will be due May 31, 2015. The expected publication date will be September 30th. Articles will be accepted in any of the Content Areas supported by the journal.
INFORMATION FOR AUTHORS

The Journal of Effective Teaching is an electronic journal devoted to the exchange of ideas and information about undergraduate and graduate teaching. Articles are solicited for publications which address excellence in teaching at colleges and universities. We invite contributors to share their insights in pedagogy, innovations in teaching and learning, and classroom experiences in the form of a scholarly communication which will be reviewed by experts in teaching scholarship. Articles should appeal to a broad campus readership. Articles which draw upon specific-discipline based research or teaching practices should elaborate on how the teaching practice, research or findings relates across the disciplines. We are particularly interested in topics addressed in the particular Content Areas described at this site, including empirical research on pedagogy, innovations in teaching and learning, and classroom experiences.

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Manuscripts for publication should:

- Follow APA guidelines (5th Edition).
- Include an abstract and 3-5 keywords.
- Typeset in English using MS Word format and 12 pt Times New Roman
- Articles/essays on effective teaching should be 2000-5000.
- Research articles should be 3000-8000 words.
- Tables and figures should be placed appropriately in the text.

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Letter from the Editor-in-Chief: Social Media Apps

Russell L. Herman

The University of North Carolina Wilmington, Wilmington, NC

Are there traversable wormholes? It used to be that the first place to look for an answer would be in the school library or an encyclopedia. Today, students would “Google it” or go to Wikipedia for a first glimpse at an answer. These are two of the many applications that have sprung from the World Wide Web. Others that are coming into the classroom are Facebook, Twitter, and Instagram. According to http://www.internetlivestats.com/ (May 2015) in one second there are 9174 Tweets, 2083 Instagram photos uploaded, 1929 Tumblr posts, 1474 Skype calls, 48789 Google searches, and 100,699 YouTube videos viewed. These are examples of social media apps, or applications.

According to Merriam-Webster (2013), social media are “forms of electronic communication (as Web sites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (as videos)” and the first appearance was in 2004. Standage (2013) argues that social media has a much longer history. Before there was the Web, there were other means to pass along information. As our forms and arenas for communication have changed, there has always been a period of adaption. One of Standage’s (2013) examples was how coffee houses in the 1600’s were viewed as a waste of time and not educational. However, Standage argues that much came out of those coffee houses in the end. While perhaps his arguments might be a stretch, there might be something to be said about the role of social media in education.

As shown in Figure 1, (eMarketer, & American Marketing Association, 2015) one quarter of the world’s population uses social media and it is projected to increase steadily. The most popular of the applications are shown in Figure 2. We notice familiar names like Facebook and Twitter, but there are many others that might not be familiar, especially to university and college instructors.

Technology usage has changed quite a bit since the World Wide Web became public in the early 1990s. In Figures 3 and 4 we indicate, similar to Marrouat (2013), some of the key milestones and entrance of key technologies as the World Wide Web has grown from a tool for sharing physics papers in the 1980’s to the global network it is today. We no longer just share text, but we share audio, images, and video. How can this rich source of information be used effectively in the classroom? We invite our readers to explore this question and report on best practices for using social apps and temporarily drawing students away from their social networks and helping them to navigate the information age.
Figure 1. The number of social network users (2010-2018 (* forcasted) (eMarketer, & American Marketing Association, retrieved 2015).

Figure 2. Leading social networks worldwide as of March 2015, ranked by number of active users (in millions) (We Are Social, 2015).
A Brief History of Social Media and the Web 1900s

Figure 3. A historical list of social media applications, web sites at the turn of the last century.

References


Merriam-Webster, the definition of Social Media was retrieved on April 3, 2015 from http://www.merriam-webster.com/dictionary/social%20media


Figure 4. A list of social media applications, web sites during the past 15 years.
Effects of Aging and Adult Development Education and Service Learning on Attitude, Anxiety, and Occupational Interest

Stefanie S. Boswell
University of the Incarnate Word, San Antonio, TX, 78209

Abstract

This study investigated the effect of a semester-long aging and adult development course that included an intergenerational, service-learning component on attitudes toward older adult men and women, aging anxiety, and interest in occupations that serve older adults among individuals training for careers in healthcare and social services. It also investigated the relationship between quality of intergenerational contact and ageist attitudes as well as differences in attitudes toward older adult men and older adult women. Data collection occurred across two semesters. Participants were 70 undergraduates from healthcare and social service majors. Attitudes improved and aging anxiety declined over the semester; interest in occupations serving older adults did not change. Quality of intergenerational contact was related to attitudes and occupational interest at pre-test and post-test. Implications for teaching as well as service-learning are discussed.

Keywords: Intergenerational attitudes, undergraduates, education.

The proportion of older adults living active, independent, and productive lives has rapidly increased over the last century and continues to rise (Potkanowicz, Hartman-Stein, & Biermann, 2009). Despite the greater number of healthy and independent older adults, the aging of the Baby Boomer generation (individuals born between 1946 and 1964) is expected to increase demand upon the United States healthcare and social service systems (Anderson, Goodman, Holtzman, Posner, & Northridge, 2012; Kydd, Touhy, Newman, Fagerberg, & Engstrom, 2014; Tomko & Munley, 2013; Wang & Chonody, 2013). When older adults seek these services, they may encounter ageism that facilitates discriminatory behavior and effects the provision of quality care (Allan & Johnson, 2009; Austin, Qu, & Shewchuk, 2013; Ben Natan, Ataneli, Admenko, & Har Noy, 2013; Eshbaugh, Gross, & Satrom, 2010; Koh, 2012). Moreover, older adults may encounter a shortage of providers qualified to address their particular needs. Although demand for professionals with aging and adult development/gerontology expertise will continue to increase, trainees in healthcare and social services fields cite multiple barriers to working in careers that serve older adults (Henderson, Xiao, Siegloff, Kelton, & Paterson, 2008; Koh, 2012). This study examined if a semester-long aging and adult development course that included an intergenerational, service-learning activity could impact known barriers (e.g., ageism, aging anxiety) to working with older adults.

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Ageism, Aging Anxiety, and Other Barriers to Careers Serving Older Adults

Researchers have identified barriers to gerontology work among healthcare and social service trainees (Wang & Chonody, 2013). These barriers include anxiety about one’s own aging (Boswell, 2012) and perceptions that jobs serving older adults are of lower status than other careers (Dahlke & Pinney, 2008; Kydd et al., 2014). However, ageist attitudes and pejorative stereotypes may be the most recalcitrant barriers to recruiting individuals to work in the jobs serving older adults (Scharlach, Damron-Rodriguez, & Robinson, 2000). Those in healthcare and social services can be particularly vulnerable to the development of ageist attitudes due to their high degree of contact with narrow subset of older adults – those with chronic health concerns (Yun-e, Norman, & While, 2013). Ageist beliefs among healthcare and social service providers may be related to poor quality contact with older adults (Scharlach et al., 2000; Stewart, Giles, Paterson, & Butler, 2005; Wang & Chonody, 2013), generalization of stereotypes of pathology to all older adults (Rosowsky, 2005), and a dearth of formal aging and adult development/gerontology education in training programs (Kane, 2007; Scharlach et al., 2000).

Ageism is a unique type of negative attitude because young adults who possess these attitudes will one day become old themselves (Packer & Chasteen, 2006; Nelson, 2011). Therefore, mitigating ageism’s effects involves two tasks: altering attitudes toward older adults as a group as well as anxieties about individuals’ own aging processes (Laditka, Fischer, Laditka, & Segal, 2004). Much research has addressed ageist attitudes of young adult healthcare and social service trainees toward older adults (Narayan, 2008) and several scholars consider education to be a critical influence on trainees’ attitudes toward their own aging and in turn, toward older adults as a group (e.g., Ferrario, Freeman, Nelllett, & Scheel, 2008; Lynch, 2000; Weir, 2004).

Aging and Adult Development/Gerontology Education, Ageism, and Aging Anxiety

Several researchers have investigated the ability of aging and adult development/gerontology education to quell ageist attitudes and aging anxiety. Proponents of formal educational interventions avow that knowledge is a crucial influence upon healthcare and social service trainees’ attitudes toward aging; accurate knowledge precipitates positive attitudes while inaccurate knowledge precipitates negative attitudes (e.g., Stewart et al., 2005). Prior research supports causal relationships between aging and adult development/gerontology education and ageist attitudes. For example, Cottle and Glover, (2007), Ferrario et al. (2008), and O’Hanlon and Brookover (2002) found that aging and adult development/gerontology education training significantly improved attitudes toward older adults. Additionally, previous research has yielded a positive correlation between knowledge of gerontology and attitudes toward older adults (e.g., Kane, 2007).

Research, however, has yielded inconsistencies in the studies of attitudes toward older adults; for example, Knapp and Stubblefield (2000) and Williams, Anderson, and Day (2007) found no attitude change following participation in an aging and adult development/gerontology education program. One possible reason for inconsistent findings could
be based in how attitudes toward older adults are assessed (Narayan, 2008; Kite, Stockdale, Whitley, & Johnson, 2005). Most studies direct participants to provide attitudinal information about a gender-neutral target; however, it is unlikely that participants are truly evaluating a gender-neutral older adult when completing attitudinal measures (Kite et al., 2005; Kite & Wagner, 2002). When the target older adult is gender-neutral, participants “tend to draw their own conclusion” and evaluate either an older adult man or an older adult woman (Narayan, 2008, p. 783). Rating of a nonspecific target may contribute to inconsistent study findings as some studies have found that older adult men are viewed more negatively than older adult women (see Laditka et al., 2004; Narayan, 2008). Therefore, it may be useful to specify the gender of the older adult target when researching the effects of education on attitudes.

Informational inaccuracies regarding age-related changes are believed to contribute to aging anxiety (Lynch, 2000). However, there is a dearth of research specifically focused on this relationship (Lynch, 2000). Moreover, the literature that exists has produced inconsistent results (Allan & Johnson, 2009; Harris & Clancy Dollinger, 2001).

**Service-Learning, Ageism, and Aging Anxiety**

Social psychology’s intergroup contact hypothesis suggests that increased contact between ingroup and outgroup members can improve attitudes toward the outgroup (e.g., Pettigrew, 1998). Caspi (1984) extended the intergroup contact hypothesis to intergenerational attitudes, contending that intergenerational contact would foster positive attitudes toward older adults. Subsequent findings have supported Caspi’s assertion; for example, undergraduates reporting greater intergenerational contact also reported more positive attitudes toward older adults compared to their peers reporting less contact (Van Dussen & Weaver, 2009). These findings suggest that service-learning activities designed to increase intergenerational contact may also be useful interventions for reducing barriers toward work with older adults.

Indeed, intergenerational, service-learning interventions have produced positive effects upon attitudes toward older adults (Penick, Fallshore, & Spencer, 2014). Students experiencing intergenerational contact in the classroom report greater knowledge of older adulthood as well as greater interest in careers related to aging (Vélez Ortiz, Cross, & Day, 2012). Moreover, intergenerational service experiences outside of the classroom also produce improvement in undergraduates’ attitudes. For example, undergraduates conducting intergenerational interviews during an aging course developed more complex perceptions of older adults (rather than maintaining simplified stereotypes of the group) (Hayslip, Caballero, Ward-Pinson, & Riddle, 2013). While many studies of intergenerational service-learning have investigated the effects of semester-long interventions, this study investigated the effect of a short-term service-learning experience imbedded within a course. Moreover, in addition to investigating the interventions effects on attitudes toward older adults, it also investigated the effect on aging anxiety, a variable previously uninvestigated in the service-learning literature.
The Current Study

Given the influence of ageism on healthcare social services, the increasing demand for professionals to have aging and adult development/gerontology expertise, and the inconsistent relationship between formal educational training and ageism, the current study investigated the effect of a semester-long aging and adult development course with an embedded service-learning activity on attitudes toward older adult men and women, aging anxiety, and interest in working in settings that serve older adults. The study focused specifically on individuals training for careers in healthcare and social services (e.g., nursing, counseling, social work, medicine) who were enrolled in a junior-level course on aging and adult development. The course contained didactic lessons on a variety of topics germane to aging and older adulthood; it also involved assignments aimed to increase the salience of trainees’ biases so they could identify and create an action plan to address them. It also contained work designed to increase students’ perceptions of commonality with older adults; this has previously been associated with improved attitudes toward older adults (Gonzales, Morrow-Howell, & Gilbert, 2010). Finally, it involved a service-learning component designed to increase contact with a known older adult.

For the current study, it was hypothesized that:

1. Given the relationship between quality of intergenerational contact and attitude (Scharlach et al., 2000; Wang & Chonody, 2013), ratings of contact with older adults would be associated with attitudes and occupational interest.
2. Attitudes toward older adult men, attitudes toward older adult women, and occupational interests would increase from pre-test to post-test.
3. Aging anxiety would decline.
4. Finally, it was hypothesized that older adult women would be rated more positively than older adult men. While this finding would be consistent with previous research, it was also hypothesized because the sample of the current study was predominantly female and previous research has found that female participants tend to rate female targets more positively (e.g., Laditka et al., 2004).

Method

Participants

Power analysis was conducted using G*Power 3 (Erdfelder, Faul, & Buchner, 1996; Faul, Erdfelder, Lang, & Buchner, 2007). A power of .90 and an alpha level of .05 were used to calculate the minimum number of participants needed to detect a medium effect size (0.30). The analysis indicated that data from a minimum of 61 participants would be needed for the study.

Participants were recruited from sections of a junior-level course on aging and adult development that addresses physical, psychological, and social changes across the adult lifespan. Students enrolled in the course are typically training for allied health and mental health professions. Data collection occurred over the course of two semesters; 43 stu-
students participated during the Fall semester and 50 participated during the Spring semester. The initial sample was composed of 83 participants; however, data from two participants were excluded because these individuals withdrew from the course prior to completion of the study. Data from an additional 11 participants were excluded due to incompleteness of study measures. Therefore, the final sample included 70 undergraduates (n = 62, 88.6% female; n = 8, 11.4% male). Participants’ age ranged from 18 to 38 (M = 21.33). The sample was ethnically diverse; 45.7% (n = 32) identified as Latino/a, 31.4% (n = 22) identified as White, 10% (n = 5) identified as multiethnic, 5.7% (n = 4) identified as Black, and 4.3% (n = 3) identified as Asian. One participant identified as Pacific Islander (1.45%, n = 1); one participant did not provide information about ethnic background (1.45%, n = 1). With regard to college classification, the sample was comprised of 2 freshmen (2.9%), 29 sophomores (41.4%), 26 juniors (37.1%), and 10 seniors (14.3%). Participants reported their major as either nursing (n = 31, 44.3%), psychology (n = 25, 35.7%), pre-medicine (n = 4, 5.7%), nuclear medicine (n = 2, 2.85%), music therapy (n = 2, 2.85%), sociology (n = 2, 2.85%), criminal justice (n = 2, 2.85%), or other (n = 2, 2.85%).

All participants were students at a medium-sized, open-enrollment university in the southwestern United States. Participants were offered five bonus points toward the first course assignment as incentive for participation. The Institutional Review Board reviewed and approved this study.

Measures

Demographic information. Participants completed a questionnaire to gather information about age, sex, ethnicity, college class, and major.

Attitudes toward older adults. Attitudes toward older adults were measured using Polizzi’s Refined Version of the Aging Semantic Differential (ASD; Polizzi, 2003). The ASD contains 24 polar-opposite adjective pairs; each pair forms a continuum from negative to positive. Examples of the adjective pairs include “pessimistic/optimistic,” “cragby/cheerful,” and “bad/good” (Polizzi, 2003, p. 201). Participants rate a target individual on each of the pairs using a scale that ranges from -3 to +3; the midpoint of the scale is labeled “Neutral,” indicating a neutral attitude. Scores can range from -72 to +72; higher scores are indicative of more positive attitudes toward the target individual. A neutral score is zero. To prevent response set, positive and negative adjectives are ordered randomly on the left side (-3) of the scale; positive adjectives are recoded prior to data analysis. Polizzi (2003) and Pollizi and Millikin (2002) reported excellent internal-reliability coefficients for the male ASD (α = .97) and female ASD (α = .97). In the current study, the internal-reliability coefficients for the male and female ASDs respectively were .93 and .92 at pre-test and .93 and .93 at post-test.

For this study, participants completed two ASD measures at each testing, one for a target described as “the typical male aged 65 to 85” and one for a target described as “the typical female aged 65 to 85.” The male ASD and female ASD were counterbalanced to pre-
Aging Anxiety. The Anxiety about Aging Scale (AAS; Lasher & Faulkender, 1993) is intended to measure anxiety about one’s own aging process. It is a 20-item, Likert-type instrument; responses are made on a scale ranging from 1 (strongly disagree) to 4 (strongly agree). Total scores can range from 20 to 80; higher total scores indicate greater aging anxiety. The AAS has four subscales (Fear of Old People, Fear of Loss, Physical Appearance, and Psychological Concerns). The Fear of Old People subscale measures comfort in interaction with older adults (Harris & Clancy Dollinger, 2003). Although these items are not directly related to one’s own aging process, Lasher and Faulkender (2003) state that they measure anxiety in individuals who are “defensive” about aging (p. 257). These individuals may experience discomfort being around older adults, representatives of the aging process. The Fear of Loss subscale assesses anxiety about loss associated with aging (e.g., “I fear that when I am old all my friends will be gone” and “I am afraid there will be no meaning in my life when I am old”) (Lasher & Faulkender, 2003, p. 254). The Physical Appearance subscale measures anxiety about normative age-related changes in physical appearance. Finally, the Psychological Concerns subscale measures anxiety about psychological change and subjective well-being in older adulthood (e.g., “I expect to feel good about myself when I am old” and “I will have plenty to occupy my time when I am old”) (Lasher & Faulkender, 2003, p. 254).

Lasher and Faulkender report a good internal reliability coefficient for the full AAS (α = .82). In the current study, the AAS internal reliability coefficient at pre-test and post-test was acceptable, α = .70 (Wasserman & Bracken, 2003).

Occupational interest. Participants rated their interest in working in a setting that provides services to older adults using a 7-point, Likert-type scale. The scale ranged from 1 (not at all interested) to 7 (very interested).

Quality of intergenerational contact. Participants rated the overall quality of their interactions with older adults using a 7-point, Likert-type scale. The scale ranged from 1 (very negative) to 7 (very positive).

Procedure

A repeated measures, fully within-subjects (pre-test, post-test) design was utilized to examine change in participants’ attitudes toward older adult males and females, anxiety about aging, and interest in working in a career that serves older adults over the course of the 16-week semester. Participants completed all study measures during class time; participants completed the measures on the first and last days of class.

Over the course of the 16-week semester, participants attended classroom lessons and completed readings on modules addressing a breadth of issues related to adult development and aging. These modules included trends and concepts in aging (e.g., increased life expectancy, normative and non-normative influences on development), physical and
sensory changes (e.g., physical appearance, vision, organ functioning), mental health issues (e.g., depression, neurocognitive disorders), relationships and sexuality (e.g., romantic and familial relationships, physical changes affecting sexual behavior), living arrangements (e.g., aging in place, long-term care), occupational issues (e.g., job satisfaction, retirement), leisure and social relationships (e.g., finding meaningful use of time, friendship styles), cognition (e.g., attention, working and long-term memory), and emotional experiences and subjective well-being (e.g., happiness, coping).

In addition to this course material, participants completed a series of assignments linking course material to their personal beliefs and experiences, interpersonal interactions, and developmental concerns. For the first assignment at the beginning of the semester, participants described attitudes toward aging within the context of the cultural groups with which they identify (e.g., religious group, ethnic group). They also described stereotypical beliefs they held that generated feelings of negativity or fear about aging or older adults (e.g., older adults are irritable; aging inevitably involves significant loss of cognitive function) and then created an action plan to examine evidence associated with these beliefs. Students also described personal beliefs that led them to behave in a biased way toward others and created action plans designed to change this behavioral pattern. In the second assignment, students located recent news items describing research related to adult development and aging, thus linking class content with popular media sources that they use regularly. In the third assignment, participants identified and described non-normative, normative history-graded, and normative age-graded experiences that shape the aging process, including their own. At the end of the semester, participants identified and described developmental concerns that are shared by both young adults and older adults (e.g., changing nature of friendships and romantic relationships, job seeking, use of financial resources). Participants selected two developmental concerns and described how their personal experiences with these concerns were similar to that of older adults they know. This component was aimed to increase perceived commonality with older adults. Participants also identified biased beliefs that they continued to hold and created an action plan to manage the impact of these beliefs on their behavior toward older adults.

For the service-learning component of the course, participants submitted a paper based on an intergenerational interview conducted with an individual over the age of 65. For this assignment, participants interviewed an older adult about change in cognitive functioning (e.g., working memory and attention, explicit and implicit long-term memory) and physical functioning (e.g., sensory function, appearance, body build mobility, sleep) across the lifespan. Participants compared information from the interviewee to research findings about normative age-related changes in these domains. Participants also gathered retrospective information about interviewees’ expectations and stereotypes about the aging process and how those compared to the interviewees’ actual aging experience.

Results

Bivariate correlations for attitudes toward the older adult male, attitudes toward the older adult female, aging anxiety, quality of contact, and occupational interest at pre-test and
post-test are presented in Table 1. At pre-test and post-test, attitudes toward older adult men and older adult women were significantly positively correlated with perceived quality of contact with older adults and inversely correlated with aging anxiety. Perceived quality of interaction with older adults had an inverse correlation with aging anxiety at pre-test and post-test. Occupational interest had positive correlations with attitudes toward older adult men pre-test and post-test; it was inversely related to aging anxiety at pre-test only. Finally, occupational interest was significantly related to attitudes toward older adult men at pre-test and post-test. Occupational interest was not significantly related to attitudes toward older adult women. All significant correlation coefficients were medium or medium-to-large effect size (Cohen, 1992).

Table 1. Pre-Test and Post-Test Bivariate Correlations.

<table>
<thead>
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<th>Variable</th>
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<td>1. Attitude, Older Adult Male</td>
<td></td>
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<td>-.47**</td>
<td>.35**</td>
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<td>2. Attitude, Older Adult Female</td>
<td>.65**</td>
<td></td>
<td>-.38**</td>
<td>.37**</td>
<td>.15</td>
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<td>3. Aging Anxiety</td>
<td>-.55**</td>
<td>-.38**</td>
<td></td>
<td>-.41**</td>
<td>-.45**</td>
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<td>4. Quality of Contact</td>
<td>.50**</td>
<td>.31*</td>
<td>-.39**</td>
<td></td>
<td>.50**</td>
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<td>5. Occupational Interest</td>
<td>.35**</td>
<td>.10</td>
<td>-.20</td>
<td>.48**</td>
<td></td>
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Note. Correlations for Time 1 are presented above the diagonal; bivariate correlations for Time 2 are presented below the diagonal.

* p = .05; ** p = .01

A RMANOVA was conducted to determine if study variables changed over the course of the semester; it was predicted that aging anxiety would decrease over time whereas attitudes toward older men, attitudes toward older women, and occupational interest would increase over time. To keep the total alpha level below the customary .05 value, this value was divided by the total number of repeated-measures analyses to be performed (four); to be considered significant, the alpha value for each analysis had to be below 0.01. As predicted, attitudes toward older men and older adult women significantly increased over time. Aging anxiety significantly decreased over time. However, occupational interest did not change. Means, RMANOVA results, observed power, and effect sizes are presented in Table 2.

Table 2. Means, Repeated Measures Analysis of Variance for Study Variables.

<table>
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<th>Variable</th>
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<th>Observed Power</th>
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<td>Occupational Interest</td>
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<td>.84</td>
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</tbody>
</table>
One-sample t-tests were performed to determine if attitudes toward older adult men and older adult women were significantly different from neutral at the beginning of the study. To control the family-wise Type I error rate for multiple comparisons, the customary $\alpha = .05$ was divided by two to produce a significance value of $\alpha = .025$. At pre-test, attitudes toward both older adult men ($M = 13.36$), $t(69) = 5.34$, $p < .001$, and older adult women ($M = 23.63$), $t(69) = 10.12$, $p < .001$, were significantly different from neutral. Participants reported significantly positive attitudes toward older adults at baseline/pre-test.

Paired-samples t-tests were performed to determine if differences existed in attitudes toward older adult men and older adult women at both pre-test and post-test. To control the family-wise Type I error rate for multiple comparisons, the customary $\alpha = .05$ was divided by two to produce a significance value of $\alpha = .025$. At pre-test, attitudes toward older adult women ($M = 23.63$) were significantly more positive than attitudes toward older adult men ($M = 13.36$), $t(69) = 4.48$, $p < .001$. This significant difference remained at post-test, $t(69) = 5.21$, $p < .001$; older adult women ($M = 30.87$) were rated significantly more positively than older adult men ($M = 20.61$).

**Discussion**

The main focus of this study was to investigate the effect of a semester-long, junior-level aging and adult development course on attitudes toward older adult men and women, aging anxiety, and interest in working in settings that serve older adults among individuals training for careers in healthcare and social services (e.g., nursing, counseling, social work, medicine). Participants also completed a short-term service-learning activity. This study also investigated the relationship between quality of intergenerational contact and ageist attitudes as well as differences in attitudes toward older adult men and older adult women.

**Attitudes Toward Older Adult Men and Women and Aging Anxiety**

The results of the current study reflect a generally positive view toward older adults by young adult healthcare and social services trainees. At pre-test, participants reported more positive than negative attitudes toward older adults; attitudes improved more across the semester. This finding supported part of the study’s primary hypothesis that attitudes toward older adult men and older adult women would improve with completion of the course. These results corroborate those of recent studies that also found trainees to have positive attitudes toward older adults (e.g., Celik, Kapucu, Tuna, & Akkus, 2010; McKinlay & Cowan, 2003). Contemporary young adult trainees may espouse more positive views of older adults as a result of growing up in a more diverse, open culture with exposure to greater models of healthy aging (Narayan, 2008). Given the more recent findings that trainees have generally positive attitudes toward older adults, it is possible that the ageist attitudes present in healthcare and social services settings develop as trainees transition to part-time and full-time work and overgeneralize perceptions formed while serving with range-restricted, high pathology populations or in settings with limited resources (Yun-e et al., 2013).
As predicted, attitudes toward older adult females were significantly more positive than attitudes toward older adult males at both pre-test and post-test. These findings are inconsistent with the assertion that a “double standard of aging” exists in which older adult women are viewed more harshly than older adult men (Sontag, 1972). According to the double standard, women are viewed as “old” at earlier ages than men and viewed more negatively, primarily due to changes in appearance; men may become more attractive with age, however, women become less attractive with age (Sontag, 1972). Findings from multiple studies do not support the existence of an overarching double standard. Some research finds that older adult women are rated more favorably than older adult men (e.g., Laditka et al., 2004; Narayan, 2008); other research finds that preference for the older adult male or older adult female is dependent upon the domain being rated (e.g., family, work) (Kornadt, Voss, & Rothermund, 2013). The more positive views of the older adult female yielded in the current study may also be related to the constituency of the study sample: women dominated this sample. Previous research has found that young adult women tend to rate older adult women more favorably than their young adult men counterparts (Laditka et al., 2004); this may account for the attitudinal difference found in this study.

As hypothesized, participants reported significantly lower aging anxiety at post-test. This finding supports the assertion that informational inaccuracies regarding age-related changes can contribute to aging anxiety (Lynch, 2000). Given that anxiety about one’s own aging is believed to contribute to ageism, educational interventions that lessen aging anxiety may in turn lessen ease negative attitudes toward older adults.

**Implications for teaching and learning.** The finding that attitudes improved over the course of formal aging and adult development/gerontology coursework may lend more clarity to literature base with some inconsistent findings on the matter (e.g., Boswell, 2012; Ferrario et al., 2008; Knapp & Stubblefield, 2000; Treharne, 1990). More importantly, attitudinal response to formal education has significant implications for the training of individuals in healthcare and social service careers. Findings such as this emphasize the importance of teaching and learning in the development of trainees and also in the development of working professionals. The teaching of innovative, aging-related research may mediate the effects of ageist attitudes in the workplace, in turn mitigating discrimination against older adults in healthcare and social service environments. Creating opportunities for providers to learn new information in their fields, through continuing education workshops or lengthier college courses, may improve attitudes towards those that they serve.

**Occupational Interest, Attitudes, Service-Learning, and Quality of Intergenerational Contact**

The hypothesis that students would report significantly increased interest in jobs serving older adults was not supported. These findings were somewhat surprising given that participation in aging and adult development and gerontology education is typically associated with higher interest in aging-related careers (Cummings, Adler & DeCoster, 2005; Cummings, Galambos, & DeCoster, 2003). However, some previous research has also
failed to yield a significant relationship between aging/developmental education and interest in working with older adults (Carmel, Galinsky, & Cwikel, 1990).

However, the hypothesis that quality of intergenerational contact was positively associated with attitudes toward older adult men and women, as well as occupational interest, at both pre-test and post-test was supported. Previous research has found that intergenerational contact fosters positive attitudes toward older adults (e.g., Stewart et al. 2005; Van Dussen & Weaver, 2009). Of particular importance is the quality of intergenerational contact; higher quality contact can positively affect attitudes toward older adults even if the contact is not high in quantity (Allan & Johnson, 2009). In this study, quality of intergenerational contact was also positively associated with occupational interest.

Implications for teaching and learning. It is possible that teaching and learning paired with a short-term service-learning intervention within the context of a college class is insufficient to generate significant interest in working with older adults among individuals without this occupational predilection. The integration of more time-intensive service-learning projects into aging and adult development and gerontology courses may provide a mechanism to increase trainees’ interest in aging-related careers. Research positively linking the quantity of intergenerational contact with attitudes toward older adults (e.g., Stewart et al., 2005) suggests that greater intensity of service-learning contact may be necessary for attitudinal change. Indeed, Vélez Ortiz et al. (2012) found that semester-long service-learning interventions could increase undergraduates’ interest in aging-related careers. Service-learning coursework furthers engagement with course material, reinforces course concepts via application, and encourages commitment to social justice (Hansen et al., 2007; Weinreich, 2003). Moreover, intergenerational service-learning projects tend to be valued by young adults, increase their caring and respect toward older adults, and improve their attitudes toward their own aging (Hwang, Wang, & Lin, 2013; Kalisch, Coughlin, Ballard, & Lamson, 2013; Weinrich, 2003). Individuals who have engaged in intergenerational service-learning projects have reported increased intention to continue to serve older adult populations (Kalisch et al., 2013). Moreover, there is evidence that collegiate service-learning experiences foster occupational interest (Hansen et al., 2007) and impact career interest and development (Warchal, & Ruiz, 2013). Further research is merited to clarify the relationship between aging and adult development education and interest in careers serving older adults. If such formal education can increase interest in these careers, it would be useful to determine if it facilitates intent and efforts to attain such careers. Moreover, additional research is merited to clarify how quantity and quality of intergenerational service-learning activities relate to undergraduates’ attitudes toward aging.

Additional Implications for the Scholarship of Teaching and Learning

Additional implications for the scholarship of teaching and learning may be derived from these findings. The design of this study (a pre- and post-course assessment) is an example of the scholarship of teaching and learning in practice (Lambie, Ieva, & Ohrt, 2012). Assessing attitudinal change and interest at the beginning and end of the semester may provide a way to measure if students profited from a course. Although the results of this
study did not support that formal class training and time-limited service-learning alone can facilitate interest in a particular career, its findings do suggest that experiential opportunities (e.g., service-learning, intergenerational classrooms) known to improve attitudes toward others may serve as a pathway to enhance career interest in service-oriented fields.

Limitations

The current study is limited by the absence of a control group. Because of this, it is not fully possible to draw causal inferences about the effect of this approach to aging and adult development education on attitudes. Moreover, it is limited by the constituency of the sample. Women constituted the majority of the sample for this study; given that young adult women tend to rate older adult women more favorably than their young adult men counterparts (Laditka et al., 2004), results of the study may have been affected by the lack of men in the sample. The predominance of women in the sample may also explain the significantly higher ratings for older adult females at both pre-test and post-test.

Caution must be exercised if attempts are made to generalize results from this study to other young adult samples. The individuals enrolled in this course are studying for careers in healthcare and social services. Their attitudes towards older adults may not be reflective of individuals from a broader college population. Moreover, they may be unrepresentative of a general, non-collegiate young adult population. Given the homogeneity of the sample in terms of age, gender, and major/career interest, caution should be exercised if generalizing results to dissimilar groups.

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Enhancing Teaching Effectiveness and Student Learning Outcomes

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Abstract

This manuscript addresses how post-secondary educators can enhance their teaching effectiveness and student learning outcomes through student assessment. Highlights will include evidence-based practices, teaching style, methodology, and the use of assessment data for university instructors. Primary focus will be data obtained from key stakeholders to improve teaching practices to better meet the needs, expectations, and goals of their students, programs, and institutions, including consideration of implications for institutional program assessment on a broader scale.

Keywords: Assessment, feedback, data, student outcomes, teaching effectiveness.

Assessment of effective teaching at all levels as a function of student learning outcomes has become a major focus of discussion across the U.S. Graduation rates among African-American, Hispanic, Native American, and low-income students are lower than other socio-ethnic groups in the U.S. (NCATE, 2010). Forty-five states are now implementing common core state standards to better align the K-12 curriculum across the country, and many areas are tying teacher evaluations to student achievement. Unlike K-12 education, higher education lacks uniform measures to assess the quality of classroom instruction. Some proponents of assessment advocate for common final exams in large multi-section introductory courses in departments at postsecondary institutions (Chingos, 2013). Since no universal college-level assessment measures exist, however, we must focus on aspects of instruction that positively correlate to teaching effectiveness, and use student feedback and program benchmarks to assess that efficacy.

Literature Review

Teaching Excellence

Effective instructors commonly pride themselves on having positive student interactions in and out of the classroom, provide prompt feedback, and encourage teamwork amongst students (Hammer, Piascik, Medina, Pittenger, Rose, Creekmore, Soltis, Bouldin, Schwarz, & Scott, 2010). The most impactful teachers also obtain and implement constructive feedback, and use different techniques to encourage active learning oriented towards students becoming self-directed, independent, and critical thinkers (Hammer et al.,

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Exceptional instructors are culturally sensitive, respectful, passionate, and charismatic. They challenge students to work to their potential by setting high, yet reasonable expectations, emphasizing open communication, and asking higher-order thinking questions that stimulate discussion. Committed to their craft, they practice teaching as an art that requires modification and mastery.

**Evaluating Teaching Excellence**

Three predominant sources for teaching excellence assessment include students, colleagues, and the teacher. Students complete evaluations at the end of the semester to provide formative and summative feedback about the course and its outcomes. Colleagues provide constructive feedback for their peers by acknowledging strengths, as well as areas for further improvement. Self-evaluation requires self-reflection and enables the instructor to assess his or her growth over time in order to highlight and acknowledge improvement (Hammer et al., 2010).

**Best Practices**

According to researchers from Flinders University (2013), several aspects of teaching in Australia warrant evaluation, including a myriad of best practices that educators can use to enhance student-learning outcomes. The primary evaluative aspect is assessing the quality of classroom teaching. University instructors must be skilled, knowledgeable, informed, and prepared in order to create optimum learning experiences (Flinders, 2013). The most effective teachers deliver concrete, explicit, and engaging instruction, implement evidence-based classroom management and teaching strategies, and build strong relationships with their students (Macsuga-Gage, Simonsen, & Briere, 2012).

**Instructional Delivery.** Teachers must prioritize the material they address to ensure that it meets the course’s learning objectives. Effective teachers focus on core topics and sequence information to cover basic material before introducing new topics. Additionally, they organize activities in strands, presenting content through small segments of instruction over several days, rather than planning one activity to address the entire concept. They assign students activities that promote understanding of skills and knowledge (Macsuga-Gage et al., 2012). They focus on engaging students to build their communication and social skills, learn how to work interdependently, and enhance their self-efficacy. Effective instructors use specific praise, reinforcements, and constructive feedback to give students a holistic understanding of a topic.

**Utilize empirically supported classroom management practices.** Mastery instructors engage in self-management and consultation, tracking their usage of classroom management skills and developing action plans to modify their practices based on data (Macsuga-Gage et al., 2012). Through consultation, instructors work with colleagues to collect and implement data to gauge student strengths and weaknesses, and then use protocols to turn weaknesses into strengths. The most effective teachers monitor progress and assess how their changed practices have impacted student outcomes (Macsuga-Gage et al., 2012).
**Building positive relationships with students.** To connect with students and impact their lives personally and professionally, teachers must be student-centered and demonstrate respect for their background, ideologies, beliefs, and learning styles. The best instructors use differentiated instruction, display cultural sensitivity, accentuate open communication, offer positive feedback on students’ academic performance (Macsuga-Gage et al., 2012), and foster student growth by allowing students to resubmit assignments prior to assigning a grade.

**Emphasizing quality over quantity.** According to Weimer (2006), teaching content and methods are inextricably linked and co-dependent; teaching material impacts student learning more than the number of topics covered in class. Emphasizing quality helps students gain a mastery understanding of topics through engaging in discussion and activities that help them grasp and retain materials (Weimer, 2006). Instead of teaching a vast amount of information over a semester, instructors are encouraged to spend time on topics that are most relevant and critical to targeted student-learning objectives for that course and program (Weimer, 2006).

**Challenging Course Curricula Emphasizing Higher Order Thinking Skills.** Essential targets for instruction include encouraging students to focus on the most compelling course concepts, develop higher-order and critical thinking skills, and demonstrate the application of their knowledge. Research has shown that students put less effort into difficult courses compared to less rigorous courses, find them to be less meaningful, and are less confident that they can do well in the class (Lynch, 2008).

To challenge students and create a stimulating, engaging environment, instructors need to assist them in thinking outside of the box in critical and creative ways. Connecting curricula to students’ lives and offering opportunities for them to innovatively employ their knowledge to solve relevant issues are also effective teaching practices (Lynch, 2008). Experiential activities such as role playing, completing case studies, cooperative group work and thought-provoking discussion questions all allow students to apply their knowledge. To captivate students’ attention and help them retain information, instructors can ensure that assignments address and contribute to identified outcomes for the major. They can also use techniques to foster maximum learning (asking higher-order critical thinking questions, problem based learning, case studies, computer based learning), critical reflection (logs, journals, collaborative learning), and inquiry (small group learning) (Lynch, 2008).

**Faculty and Student Interaction.** Faculty and student interaction refers to the degree of responsivenes, helpfulness, concern, approachability, compassion, and understanding that instructors’ display towards their students. Research shows that students are more likely to interact with instructors and be more academically successful if their instructors possess leadership skills, and are sociable, intelligent, objective, and supportive (Furnham & Chamorro-Premuzik, 2005).

In accordance with Komarraju, Musulkin, & Bhattacharya (2010), researchers found that students who believed that their instructors were respectful and available reported higher
levels of confidence in their academic skills and increased levels of intrinsic and extrinsic motivation. Students who felt that faculty lacked interest in them reported feeling less motivated (Komarraju et al., 2005). Faculty who encourage students to come to office hours, ‘bring themselves to the classroom,’ share personal anecdotes, and demonstrate a genuine personal and academic interest in students report stronger student outcomes (Cox, McIntosh, Terenzini, Reason, & Louvsky-Quaye, 2010).

Numerous techniques can increase positive interactions between faculty members and students. Instructor availability fundamentally impacts student success and educator effectiveness. Students who feel that their instructors are understanding and communicate frequently will be more likely to succeed academically (Bain, 2004). Instructors who communicate openly, respond quickly to email, clearly address expectations, provide students with substantial constructive feedback produce positive student outcomes. Providing assignments that students find relevant, timely, relatable, and encourage personal investment can build trust amongst class members and instructors (Bain, 2004).

Lessons that encourage students’ opinions and feedback increase students’ sense of self-efficacy and self-esteem. Showing empathy and sensitivity towards students who may be struggling personally or academically can strengthen the student/instructor relationship (Bain, 2004). If students sense that instructors care about them and are invested in their success, they are more likely to feel hopeful about their chances of succeeding and be more willing to engage. Developing a strong rapport with students stimulates student motivation, classroom discussion, and rates of satisfaction, better communication, and trust. Instructors who take the time to know their students create a more productive and proactive classroom experience (Weimer, 2010).

Supporting student success is vital for student persistence, learning, and satisfaction (Weimer, 2010). Active mentorship can connect students to opportunities for counseling, peer mentoring, and writing. Student retention depends on teachers effectively communicating concepts, expectations and identifying resources for support. Students’ likelihood of using such support often correlates to the quality of relationship they have developed with the faculty members who are encouraging them to reach out.

**Differentiating Instruction.** Differentiation is an aspect of a teachers’ professional, pedagogical competence that ensures that each student achieves the intended learning target (Burton, 2003). Effective instructors utilize a variety of learning modalities to differentiate instruction for an array of student learning styles. Some argue that schools are responsible for adapting to the developmental needs of every learner (Coffey, 2007). Due to the increasing heterogeneity of students, attention is increasingly paid to ensuring that all students receive an appropriate education through auditory, visual, and kinesthetic materials (Humphrey et al., 2006). Instructors attempt to meet their students’ learning needs and use additional techniques if students struggle to understand course content and applications. Congruent teaching implies that a teacher models his or her pedagogical theories, and can be used in addition to differentiated instruction to stimulate student learning and ensure that all students’ needs are met (Loughran & Berry, 2005). Congruent instruction
is innovative in that it allows students to introduce a variety of educational principles in classroom practice (Loughran & Berry, 2005).

Learning is Culturally and Socially Relevant to Students’ Lives. Learning outcomes describe the measurable skills, abilities, knowledge, or values that students should have amassed upon finishing a program (USC, 2010). Culturally relevant teaching empowers students socially, emotionally, intellectually, and politically by creating a connection between students’ home and school lives, while meeting district curriculum requirements (Ladsen-Billings, 1994). Learning must be socially relevant to students’ lives to help them apply classroom content outside of school. According to Anderson & Burns (2013), one strategy that instructors can use to assess relevance is to ask students to write a one-minute paper on the topics that they found most significant during the class. This allows students to consider what they deemed relevant, and to explore the depth of their knowledge (Anderson & Burns, 2013).

Course Organization and Planning. Bain (2004) states that organization and planning assess several key factors: an instructor’s ability to clearly communicate course expectations, create course assignments that aid student learning, prepare lessons that demonstrate knowledge of course content, and emphasize relevant course concepts.

Benton, Duchon, and Pallett (2013) conducted a study on the relationship between student self-reported ratings on their perception of learning and performance based upon course organization and importance of material. Students who rated themselves as exceptional found the course to be organized, perceived the material to be relevant, and performed better on exams and coursework than students who rated their progress as being moderate or less (Benton et al., 2013). This study substantiates the importance of structuring courses to foster positive learning outcomes.

Research also shows that students excel when they feel the instructor is prepared, knowledgeable, and organized (ETS, 2013). It is essential for educators to provide detailed syllabi with course information, objectives, assignments, course policies, grading rubrics, due dates, and a tentative schedule. Teacher preparation, knowledge of subject matter, and organization play an instrumental role in student success (Bain, 2004). Well-prepared and organized instructors produce higher-achieving students, who score higher on aptitude and achievement tests, demonstrate higher grade point averages, and complete assignments in a more comprehensive and detailed manner (Teitel, 2004).

According to the National Council for Accreditation of Teacher Education (NCATE, 2010), two components are essential ingredients for teacher preparation: knowledge of the subject matter, and the ability to effectively disseminate knowledge. Data results from this scale enable instructors to make changes regarding their preparedness, course structure, course objectives, and relevant assignments, to clarify the course’s purpose and connect the materials and assignments to enhance student-learning outcomes (NCATE, 2010). A direct correlation likely exists between course organization, planning and student success; the more organized and planning-oriented an instructor is, the more likely students will be to view him or her as knowledgeable and learn the material in a struc-
tured manner. In contrast, receiving a low score on the Course Organization and Planning scale may indicate that the course lacks cohesion and clarity. The instructor may not have effectively disseminated information about course requirements and their impact on student learning. Low scores on this scale may indicate students’ dissatisfaction with the scope or delivery of the course (ETS, 2013).

**Instructors can use the following suggestions to improve course organization:**

Course objectives are derived from an approved program or major. Well-organized courses consider learning objectives as an essential component of each course’s design. Such objectives are achieved via course content, assignments, readings and supplementary materials, and frequent classroom discussions.

Organization is pivotal for instructors to disseminate information in a clear and orderly manner. Creating a semester agenda, which highlights relevant topics and activities to be covered during a given class, gives students a clear and detailed syllabus with course requirements, timelines and expectations.

Identifying challenging course curricula that encourage students to work collaboratively equips students to creatively and/or critically apply knowledge to solve relevant problems or questions. Such learning is more likely to be retained over time.

Conducting a “post mortem” on lessons can help instructors decide if instructional changes are needed. An instructor should reflect on questions like: ‘To what extent were students participating?’ ‘To what extent did students make connections from the lesson to targeted learning outcomes?’ ‘How did students perform on formative measures (quizzes, papers) related to the content of the “post mortem” lessons?’ While university faculty typically focus on content, the absence of emphasis on pedagogy may explain why student learning may not meet expectations.

To enhance student learning and help students meet expectations, instructors can prompt them to gain proficiency in research skills by assisting them in moving beyond using personal opinions as the sole basis for responses. Recognizing that critical thinking involves assessment, examination, and reflective reasoning of existing information, ideas, beliefs, and speculations, effective instructors encourage students to gain proficiency in locating and retrieving scholarly information on the assigned topic.

By integrating scholarly research into their instruction, instructors can respectfully challenge a student’s viewpoint to elicit a deeper, more reflective response using a reply supported by peer-reviewed literature. Instructors can mandate the use of peer-reviewed sources in addition to course textbooks, ask questions directly related to the student’s response, and limit the overuse of direct quotations.

Instructors can choose not to respond to students in an authoritative manner that limits discussions, and be more flexible and open-minded to keep discussions moving. They can solicit opposing views by encouraging students to make a justified argument for or
against a topic, and offer questions that cannot be answered with a simple yes or no. By stimulating a student’s reasoning process through thought-provoking questions, instructors move students beyond defining a topic to making an evaluative value judgments based on in-depth interpretation of relevant information.

**Communication.** Effective communication is a fundamental component of good teaching. An instructor’s communication skills during lesson delivery is a distinguishing factor in student learning outcomes. According to Meyers (2004), students’ perception of instructor credibility holds much clout. Credibility includes competence (instructors’ knowledge), character (honesty and integrity), and caring (ability to express concern about a student’s welfare) (Meyers, 2004). Research shows a significant and positive relationship between instructors’ credibility and their ability to communicate effectively with perceived teaching effectiveness and student motivation (Meyers, 2004). Students who perceive instructors as highly credible see them as more effective and competent, and report higher levels of motivation.

Effective communication also increases according to an instructor’s degree of enthusiasm, a classroom environment’s level of stimulation, and the use of challenging questions to provoke critical thinking skills (ETS, 2013). According to Sidelinger (2010), perceived instructor clarity and non-verbal immediacy were strong predictors of students’ willingness to participate in class and engage in self-regulated learning. Sidelinger (2010) also found that students who take ownership of their assignments, communicate effectively with their instructor, and feel engaged and stimulated, experience a greater degree of student involvement and more positive student outcomes.

Instructors can adopt a variety of practices to improve their communication skills. Charismatic instruction engages and stimulates student attention and participation, which positively impacts student outcomes. Preparing well-developed lessons with specific, illustrative examples, varying speaking tones, and integrating experiential and hands-on activities can energize students and boost their engagement. Instructors who are effective communicators are aware of the variety of learning modalities that can address differences in students’ learning styles when they struggle to understand course content and its applications.

Open communication builds rapport and allows instructors to connect with students both personally and professionally. Research demonstrates that students who feel that they can talk honestly and openly with their instructor are more academically successful (Drummond, 1995). Such communication enables students to feel comfortable and safe in learning situations, and frames questions as positive rather than punitive. It is critical for faculty to create a learning environment that encourages students to be authentic and willing to ask questions without fear of criticism or negatively impacting their grade.

**Stimulating Class Environment.** Creating a stimulating and engaging classroom environment is pivotal to student success. Research has demonstrated that experiencing positive emotions can foster well-being and improved student outcomes (Williams, Childers, & Kemp, 2013). Williams et al., (2013) found that students who experience positive emo-
tions and are stimulated in the classroom also experience higher levels of motivation, and
demonstrate behaviors that lead to academic success including studying, attendance, en-
hanced participation, and increased understanding of course materials. Williams et al. (2013) also found that such students also had a more positive outlook on their academic accomplishments.

To further stimulate students, instructors can employ activity-based learning strategies
that empower them to enhance metacognitive abilities by applying classroom information
to their own lives (Pang, 2010). Through using activity-based learning strategies and stating course expectations and goals, instructors help students increase their self-regulation skills and take responsibility for their learning and application of material (Pang, 2010). Encouraging students to take ownership of their learning also allows them to experience enhanced self-direction and self-awareness.

**Student Effort and Involvement.** Research shows that student-learning outcomes are
not solely controlled by an instructor (ETS, 2013). Other variables include their time spent studying and completing assignments, their level of preparation for each class, and attitudes towards content (ETS, 2013). Instructors can use evidence-based teaching practices to increase student effort and participation through hands-on experiential activities, cooperative learning in small groups, asking higher-order questions, and large group discussions (Center for Faculty Excellence, 2009).

Instructors may work individually with students to help them accept responsibility for
their performance, increasing their self-motivated involvement. When held accountable
for their own learning, students adopt an active role in the process through engagement in
their assignments, class activities, and special department or program events. By prepa-
ing, rehearsing, learning, and remembering knowledge through watching tutorials, com-
pleting practice exercises before learning new material, and tracking their progress, stu-
dents are more likely to succeed academically (Khan Academy, 2013).

Asking students what they want to learn and accomplish by the end of the course em-
powers them and makes the information relevant to them. Providing timely and expert
feedback assists students in understanding course material, while giving positive feed-
back enhances a student’s belief in his/her abilities. Assigning papers and projects that
are relevant to student lives and interests helps foster connections between instructors,
students, and peers, thereby creating a stimulating and collaborative atmosphere that con-
ducive to learning.

Involvement and engagement are the main components in student learning. Having stu-
dents work in small groups on experiential tasks allows them to brainstorm, learn from
one another, and collaboratively apply knowledge. The more that instructors motivate
and encourage their students to succeed, the more likely students will be to feel connect-
ed to the material, believe in themselves, and increase their learning outcomes.

According to Webber, Krylow, & Zhang (2013), student involvement and effort are key
factors to success in college. Higher levels of student engagement significantly enhanced
GPA and students’ perception of their college experience. Students who were prepared for classes they considered to be challenging had higher GPAs and reported more fulfilling college experiences (Webber et al., 2013).

**Cultural Sensitivity and Culturally Responsive Teaching.** Students will be more likely to participate in a classroom experience in which they feel the instructor is culturally sensitive and displays an awareness of and appreciation for cultural differences. Instructors can express their valuing of diversity by expecting all students to be active in the classroom regardless of disability, race, language, religion or SES status (Fallon & Brown, p. 192, 2010). Instructors can foster inclusivity by helping all students feel welcomed, accepted, understood, challenged, and accomplished. In this environment, students who are enabled to develop social and cultural capital through relationships with others foster a community of engaged learners (Center for Faculty Excellence, 2009). Through culturally responsive strategies, educators can create a classroom learning environment that merits learning for all (Fallon & Brown, 2010, p. 192).

According to Turnbull, Turnbull, & Wehmeyer (2007), instructors need to “reflect on what they believe about cultural groups other than their own and attempt to identify patterns across environments that contribute to or detract from student growth.” Students are motivated differently depending upon their culture, and therefore require differential learning instruction to meet their needs. Ginsberg & Wlodkowski (2007) state that teachers need to create a respectful, inviting, and inclusive classroom environment that celebrates student similarities and differences, since cultural isolation decreases motivation. Instructors should modify assignments that only examine an individual’s perspective, develop a collaborative environment that encourages group work, assign creative tasks that enable students to explore their strengths, promote differing worldviews, and give assignments that encourage critical thinking. To maximize learning, instructors need to integrate the different cultures in their classroom into their teaching practice (Gay, 2000). Culturally responsive instructors encourage students to use their cultural experiences to deepen their learning, and develop learning tasks that are relevant and meaningful for students (Gay, 2000).

**Instructional Strategies.** Instructors can use a myriad of strategies to optimize student learning. Cooperative learning groups give students opportunities to collaborate on brainstorming ideas and completing assignments. Instructors can enable students to think critically and problem solve by integrating problem-based group assignments for students to complete individually or in a group.

Experiential learning includes experiencing an activity, sharing or publishing reactions or observations, analyzing or determining patterns, inferring or generalizing, and applying information (NCCIC, 2009). Activities in this mode allow students to apply knowledge, encourage collaborative participation and engagement, and boost students’ communication, social, and problem solving skills. Personalized reflection and applying learning to other contexts are critical factors in effective experiential learning. A comprehensive review of research literature on college learning determined that in studies measuring information retention after a course, transfer of knowledge in new situations, problem solv-
ing, thinking, attitude change, and motivation, active learning was always more effective than solely lecturing as a teaching technique (Felder, 2007). Instructors can also develop hybrid courses that integrate online components into traditional classroom settings, allowing students to interact with the teacher and students and complete group activities in class, and complete assignments and submit them via e-mail, Google Drive, Blackboard, or other venues.

**Supplementary Instructional Materials.** In this technologically driven society, integrating technology into classroom learning is key. Using technology enables students to see tutorials online, access course information and submit assignments, instantaneously discuss opinions with peers, and review presentations for supplementary information to deepen learning. Solely utilizing a didactic approach prevents students from optimally processing and applying their knowledge, and negatively impacts their ability to conceptualize material and practice skills. Instructors who integrate technology into their classrooms increase student engagement (ETS, 2013). A professor can speak over a Power Point presentation that students have reviewed prior to class, and have students complete experiential activities based upon the presentation. Classes conducted in virtual chat rooms, discussion boards and Internet forums allow users to instantaneously post assignments, questions, or messages for other class members or the instructor.

In a study conducted by CompTIA, 78% of instructors believed that technology positively impacted their classroom. Generation Y students who have grown up in a digital world feel a great sense of disconnect when educators put them in a 19th-century traditional classroom setting (Lytle, 2011). Incorporating popular new technologies as new learning tools can impact the effectiveness and delivery of student instruction (Mishra & Koehler, 2006).

Supplementary instructional materials include online tutorials, instructional software and other web-based resources that enhance student engagement in place of standard presentation formats. Students practice skills through interactive tutorials and exercises, computerized or digitally recorded presentations and demonstrations, reading materials developed by instructors or in assigned textbooks, examples and exercises in the student’s field of interest, links to other relevant online materials; and individual and group laboratory assignments.

Students in large lecture classes are more passive than students who personally interact in smaller classes (ETS, 2013). Thus, students benefit from online discussions where they can easily communicate with each other (Mishra & Koehler, 2006). Working in assigned peer learning groups assists at-risk students in building social and communication skills, while message boards, chat rooms, Google Documents, and blogs build communication between students and instructors (NCATE, 2010).

**Using Evaluation Assessments to Improve Practice**

Universities use many different course evaluation tools to assess students’ perceptions of effectiveness of their instructor and course. Using a rating scale from most effective to
least effective, sample questions may include, ‘The instructor was prepared,’ ‘The instructor was available,’ ‘The course was organized well,’ ‘The instructor clearly communicated expectations,’ or ‘The instructor was enthusiastic.’

Over 800 universities nationwide use the SIR II Student Instructional Report (ETS, 1994) to assess students’ perceptions of their higher education learning experience. This survey helps educators improve teaching effectiveness and quality of student learning by revealing students’ perceptions about course design and instructional delivery without taking up an exorbitant amount of class time. It provides comparative data on variables including course design, instruction, and grading practices to help faculty members compare their scores to data from similar national institutions and courses. If not the SIR II itself, most universities use a survey that assesses teaching effectiveness addressing similar categories. The SIR II provides students with an anonymous platform to evaluate both course and instructor in a given semester, and allows them to assess their own learning outcomes.

Open-minded instructors can use results from the SIR II to gauge which aspects of their course or teaching could change to yield better student outcomes, as well as identifying areas in which they are excelling (ETS, 2013). Primary targets include utilizing evidence-based practices to evaluate the effectiveness of instruction and demonstrating the degree of satisfaction of student-learning objectives. University faculty members should be responsive to student feedback, as this data is essential to ongoing course, program, and instructor improvement.

Conclusion

The most impactful student-centered instructors utilize specific interventions including the following: creating stimulating curricula, interacting with students, being available and approachable, using differential instruction, addressing relevant material, being cognizant of depth vs. breadth, offering cultural responsiveness, and developing structured courses that enable them to facilitate information and empower students. Effective instructors also gather, collect, interpret, and implement data to assess student strengths and weaknesses, student learning, and the value of their instruction. The SIR II survey is an extremely effective tool in obtaining data. Similar to deliberate practice, which includes practicing and mastering strategies shown to elicit positive outcomes and assessing effectiveness of services via stakeholder feedback, using the SIR II enhances teaching effectiveness through a structured template with specific categories that reflect student learning. Instructors who utilize SIR II results to guide their practice develop classrooms that foster engaged teaching and learning.

Building a competent community of learners also requires that instructors be prepared and well-versed in their subject matter, design courses that reflect standards, and clearly communicate course content and expectations. Such instructors stimulate students’ interest via discussion, experiential and action-oriented activities, and group work. Active learning occurs when instructors connect relevant material to students’ lives. The best instructors provide high expectations, challenge students beyond their comfort zone,
make learning collaborative and interactive, and display care and concern for their students’ learning and growth.

References


The Art of Giving Online Feedback

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Abstract

The cultivation of providing online feedback that is positive, effective, and enhances the learning experience is a valuable educator skill. Acquisition of the art of providing feedback is through education, practice, and faculty development. This article provides information about the best practices for delivering online feedback to learners. An examination is given of the concept, importance, purpose, and types of online feedback. A deliberation includes the best practices for giving online feedback to learners, such as prompt, frequent, personalized, detailed, clear, specific, and balanced. Additionally, a discussion of the various avenues of delivering online feedback, such as the written word, audio file, video recording, pre-set automated feedback, and live web-based conferencing. The “art” and scientific evidence of providing online feedback are coupled in this article to provide helpful tips for the online educator.

Keywords: Online feedback, learner feedback, online teaching, balanced feedback, feedback sandwiches.

Giving effective online feedback is an important skill for educators to develop because it guides the learner’s development. Since feedback is important to the learning process, the art of giving effective online feedback is a critical skill for an educator. Teacher skills for giving online feedback to learners varies from giving feedback in face to face courses because non-verbal communications (tone of voice, facial expressions) are absent in written online feedback. Moreover, students often complain that faculty do not provide enough positive feedback (Zsohar & Smith, 2009). Learners have reported that inadequate feedback from teachers is less than satisfactory in an online course (Soon, Sook, Jung, & Im, 2000). Timely and frequent feedback from the course instructor contributes to student learning (Theile, 2003). These factors create the need for well-crafted online feedback in the written, audio, video, or in the live synchronous web-based conference format. An estimated 5.5 to 7.1 million students take at least one online course in the US according to the US Education Department and Babson Survey Research Group as reported by Kolowich (2014). An implication of providing effective online feedback is the positive impact for online learner performance (Goldsmith, 2014). This article explains practical information about the best practices of how to develop or refine the art of giving online feedback to learners.
Concept of Feedback

The definition of feedback is information from an agent, such as a teacher, peer, or other about one’s performance (Hattie & Timperley, 2007). Learners may also trade feedback with each other about coursework. Effective feedback is constructive, which means to improve performance by correcting errors (Cole, 2006; Zsohar & Smith, 2009) using a positive, future-focused, helpful manner. In addition, feedback can be informational or it can be informational and instructional (Hattie & Timperley, 2007). When feedback takes on a corrective function, then it also becomes instructional. Spink (1997) points out that feedback may be verbal or non-verbal. In the online setting, feedback for learners may be written, audio, video, or in the live synchronous web-based conference format. The definition of online feedback is information from an educator, peer, or other in an online format, such as the written word, audio file, video, pre-programmed automatic reply, or live web-based conferencing.

Purpose of Feedback

The purpose of giving feedback is to point out strengths and provide comments on areas for improvement and development. Clear, effective, meaningful feedback is a robust way to foster learning (Hattie & Timperley, 2007), especially when teamed with personalization, such as addressing the receiver by their name. In online courses, due to the lack of face-to-face interactions, feedback may function to increase a connection between the educator and learner (Bonnel, Ludwig, & Smith, 2007). The authors recommend individualized feedback for each learner that includes addressing them by their name and comments specific to their coursework.

Feedback is one of the seven principles for good teaching practice in undergraduate education described by Chickering and Gamson (1987). Later, Chickering and Gamson (1999) revised this principle to include assessment in addition to prompt feedback. Students are able to reflect on their knowledge base after receiving feedback, and think about what they need to learn after considering the feedback for improvement (Chickering & Gamson, 1999). Yet, the feedback principle was a less common principle met by online educators in a meta-analysis of the seven principles for good practice (Mukawa, 2006). The lack of providing effective feedback to learners in Mukawa’s study signals the necessity of faculty development in this area.

Replication of research findings regarding the purposes of feedback have emerged. Edwards, Perry, and Janzen (2011) presented qualitative data in their study of what makes an exemplary online educator. Affirmed, challenged, and influenced are common statements learners used in the verbatim examples regarding the feedback they received. This represents a consistent theme in the research literature that effective feedback stimulates and motivates learners to acknowledge areas of success and strive for improved performance.
Types of Feedback

Evidence published about the type of feedback that is the most effective for learners related to writing in online courses is increasing in volume. Alvarez, Espasa, and Guasch (2011) studied types of feedback for writing assignments in an online learning environment and identified four types: corrective feedback, epistemic feedback, suggestive feedback, and epistemic plus suggestive feedback. Corrective feedback is the feedback that is specific to the requirements of the assignment and content. For example, “The instructions called for x, however x was not included.” Epistemic feedback includes prompts or questions for further thought and explanation or clarification. For example, “Say more about how this concept relates to the point you make.” Suggestive feedback contains advice, expansion, or ideas to improve an idea. For example, “By giving an example of courage after you describe the concept would make the meaning of courage clearer.” Epistemic + Suggestive Feedback combines the use of prompts/questions for further development and making suggestions for improvement. In a subsequent study, the quality of learner writing performance improved the most with the use of epistemic feedback and epistemic + suggestive feedback (Guasch, Espasa, Alvarez, & Kirshner, 2013). This evidence supports the intervention that asking a question to promote critical thinking in learners is an effective feedback skill for educators to incorporate in their practice.

Best Practices for Giving Online Feedback to Learners

The collection of research studies on the topic of effective teacher feedback is extensive. Hattie (1999) reported a synthesis of over 500 meta-analyses related to effective feedback, which reported over 100 variables that influence student success. In this synthesis, receiving feedback and comments about how to improve was a powerful teacher intervention. Additionally, Hattie (1999) found that feedback that addresses items done correctly, as opposed to pointing out incorrect performance was more effective. Feedback that builds upon previous knowledge is also effective.

The volume of evidence related to feedback and online teaching practice is increasing. Online teacher practice research often includes a focus on feedback and the crucial role it plays in online courses. Providing feedback was a common response in a study of 40 undergraduate and graduate faculty when asked about effective practices for online educators (Lewis & Abdul-Hamid, 2006). Effective online feedback from educators to learners is able to guide learners toward positive learning outcomes (Getzlaf, Perry, Toffner, Lamarche, & Edwards, 2009). Feedback is a necessary skill for online instructors.

Feedback is an important intervention for the online educator because it is an opportunity to develop the instructor-learner relationship, improve academic performance, and enhance learning. In an exploratory study about online teaching behaviors, attitudes, and beliefs, Bigatel, Ragan, Kennan, May, and Redmond (2012) identified 64 teaching competencies for online teaching success. Feedback practices were identified multiple times in relation to online teaching success. Specific teaching competencies include communicating expectations for learner performance, grading that is visible to learners, providing prompt feedback, giving feedback that is helpful and enhances learning, and providing...
clear, detailed feedback on assignments (Bigatel et al., 2012). Helpful feedback builds the instructor-learner relationship through positive interactions. Feedback is a critical aspect of online educator practice (see Table 1) because it promotes the learning experience.

Table 1. Best Practices for Providing Online Feedback: Application Examples.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address the learner by name</td>
<td>For example, “Sue, the font selected for the PowerPoint presentation is easy to read. Good choice!”</td>
</tr>
<tr>
<td>Provide frequent feedback</td>
<td>Set a pattern for providing feedback to learners. For example, every week by Wednesday for the previous week and within 72 hours after an assignment deadline.</td>
</tr>
<tr>
<td>Provide immediate feedback</td>
<td>Within 72 hours of courseroom discussions and less than one week for paper/project assignments.</td>
</tr>
<tr>
<td>Provide balanced feedback</td>
<td>“Peggy, great job with including APA source citation. For APA format, place a comma after the author name and before the year. The APA for the corresponding reference on the reference page is correct! Good work!”</td>
</tr>
<tr>
<td>Provide specific feedback</td>
<td>“The second paragraph on page 4 includes helpful information that is explained in clear terms. The information in this paragraph should have a source citation and reference on the reference page. Good job using Times New Roman 12 point and double spacing the entire APA document.”</td>
</tr>
<tr>
<td>Use a positive tone</td>
<td>Two-thirds of the feedback should be positive and point out what is correct. Create a feedback tone that inspires the learner to use the comments to improve future work.</td>
</tr>
<tr>
<td>Ask questions to promote thinking</td>
<td>“Great job with the definition of the concept. What are some examples of the concept you could describe in the paper after the definition to help clarify the meaning?”</td>
</tr>
</tbody>
</table>

Lifelong education about best practices for educators regarding current recommendations for giving feedback is important. A study by Jamison (2004) compared facilitators with feedback education (treatment group) to facilitators in a control group without feedback education at the university level. The learners who received feedback from facilitators that participated in education on how to give feedback had significant differences from the control group. Learners of trained feedback facilitators were more engaged in learn-
ing, had higher levels of learner self-efficacy, and reported learning enjoyment (Jamison, 2004). The skill of providing online feedback is worthy of development in faculty.

In a descriptive exploratory, two phase study, Bonnel and Boehm (2011) studied best practices for giving feedback to online learners. Common themes emerged as 1) maximize technology, 2) use rubrics, templates, and automated responses, 3) have a system, and 4) create a feedback-rich environment. Experienced online educators provided their expert opinions about the best practices for giving online feedback to learners. Educators should maximize technology by using email communication, courseroom messaging, announcement section (when not confidential or private feedback), synchronous web-bed conferences that can be recorded for those who could not attend, audio messages, and post online office hours. Related to the use of rubrics, templates, and automated responses, participants recommended the use of rubrics, and that educators refer to them in feedback. The theme “have a system” refers to using consistent interventions to provide feedback and information, such as making expectations clear, clarifying expectations, and scheduling feedback (for example, all grading and feedback for assignments will be returned to learners within 72 hours). Other recommendations include the use of praise and constructive feedback in private, and use of online discussions for some feedback that would be appropriate for all learners to view. In addition, the “system” should include giving timely and regular feedback as stated in the course syllabus, offer support, encouragement, and promote critical thinking skills. The final theme: create a feedback-rich environment includes tips such as promote learner self-reflection, use peer review, vary feedback so it fits the assignment, use group feedback, teacher feedback, and automated feedback.

**Prompt and Frequent Feedback**

Learners are able to build on their previous experiences through receipt of timely and effective feedback. Chickering and Gamson (1987) describe prompt feedback as one of the seven principles of effective teaching. Ritter and Lemmke (2000) studied the seven principles for good teaching practice in internet-enhanced courses and reported electronic mail as a useful way to provide feedback to students. Most learning management systems have feedback areas built into the grading function that are also useful and immediate. Practice tests and exercises in the online courseroom can also be set to provide immediate, automated feedback about their comprehension of course content (Ritter & Lemke, 2000). The Net Generation learners prefer and even expect immediate feedback (Groome, 2011). Online learners define immediate feedback as ranging from 24 to 48 hours and up to one to two weeks (Getzlaf et al., 2009). A study by Arbaugh and Hornik (2006) tested Chickering and Gamson’s seven principles to online learning and found that prompt feedback was important to learners. Learners receiving immediate feedback perform better than learners who receive delayed feedback (Johnson, 2014; Lemley, Sudweeks, Howell, Laws, & Sawyer, 2007). Online discussion feedback is best returned to learners within 72 hours of the due date and time. Assignment feedback is best when returned to learners in less than one week from the due date. This allows the learner to have rapid acknowledgement of strengths and areas to improve before the next course assignment. Feedback is best when immediate (Lewis & Abdul-Hamid, 2006), because it is a critical
aspect of quality instruction, so learners know what areas they have excelled in and what areas to focus on for improvement.

In addition to timely feedback, online educators should have a feedback frequency practice established for consistent use. The practice of frequent feedback promotes online success (Junk, Deringer, & Junk, 2011) and is best when communicated to learners in the online courseroom or course syllabus. For example, the instructor may provide a statement in the course syllabus that reads, “Feedback for weekly discussions is available to learners each week by Wednesday at 11:59 pm. Feedback for assignments is available to learners within 7 days of the due date.” This transparent statement communicates to learners what and when to expect feedback. In a comparison study of individualized and frequent feedback versus collective feedback in online courses, learners in the individualized, frequent feedback group had better academic performance, and increased student satisfaction (Gallien & Oomen-Early, 2008). Frequent feedback is a best practice of online educators to promote learner success.

**Tone of Feedback**

The tone of the feedback is as important as the content of the feedback. Praise the learner by pointing out skills done well. For example, consider the difference in feedback phrased in a positive, encouraging way, and feedback that is not positive and encouraging (see Table 2). In a study of online exemplary faculty, the use of encouraging feedback with learners was identified (Lewis & Abdul-Hamid, 2006). Praise and encouragement can serve to both reward and motivate the learner to continue their hard work and strive to continue to develop and improve.

**Table 2. Positive and Negative Examples of Feedback.**

| Positive Feedback Tone | Excellent job with writing in the active tense throughout your paper! One area to make your writing even stronger is to add examples of the concepts throughout the paper. For example, when describing the concept of caring, give a few examples of when caring was present. This will clarify your meaning of caring to the reader. See sample paper AB in the courseroom resources area to see an example. You did a good job with proofreading in your paper (no spelling, grammar, or punctuation errors present)! |
| Negative Feedback Tone | “The implications for practice section needs work. Blah, blah, blah. Not enough detail.” |
Specific Feedback

Clear feedback that communicates specific information to the learner is another best practice for giving effective online feedback. A message that includes enough detail so the learner is able to understand the meaning is preferred (Bigatet et al., 2012; Lewis & Abdul-Hamid, 2006). Vague comments such as “this is vague,” “good paper,” and “there are grammar errors” (see Table 3) do not provide the learner with enough information to be able to take action to improve performance. Clear communications in the online environment are important for the instructor to use so that the message to the learner is clear (Bailey & Card, 2009). Eren (2003) studied learners’ perceptions on the effectiveness of feedback in online courses and found that detailed feedback is preferred. One tip for use when an assignment lacks clarity and is vague is to respond with a question to promote critical thinking in the learner. For example, “What could you add to this section to provide more detail for the reader?” Another example is to comment, “Say more about this idea by explaining it more for the reader. Add three or four more sentences describing this in more detail.” These comments promote critical thinking in the learner.

Jones and Blankenship (2014) studied 70 online learners regarding their perceptions of instructor feedback on course work and the incorporation of feedback in future course work. Students reported the two most helpful types of feedback as the numerical grade and a grading rubric with comments at the end of the assignment. Ninety-three percent of students reported they read the feedback, while 86 percent reported the feedback was helpful for future course work. The study was a convenience sample with 70 participants (Jones & Blankenship, 2014). Replication of the study is recommended.

Table 3. Specific Feedback versus Vague Feedback.

| Note: A specific feedback comment is of higher quality because it provides more information to the receiver. |
| Example A | Specific | “Good job with using proper citations for resources!” |
| Vague | “Good job!” |
| Example B | Specific | “There are some split infinitives in the paper. Check out more information about split infinitives in the courseroom folder titled Writing Resources.” |
| Vague | “There are some grammar errors.” |

Balanced Feedback

Balanced feedback is the use of positive, negative, and positive feedback. Also known as the sandwich method of feedback, which is a three-part technique. First, sandwiched feedback starts with a positive comment, then a comment about an area for improvement,
and then a positive comment. Feedback sandwiches serve the purpose of making constructive criticism more palatable (Toledo, 2013). Comments should be specific and appropriate to the level of the student (see Table 4 for example). That is, the comments would vary for a student in a 100 level writing intensive course versus a graduate student. Feedback that focuses on areas for improvement should include what needs correction in terms of meeting the assignment instructions. Helpful resources may also be instructive for the learner. For example, in a paper with multiple split infinitives, a resource about split infinitives may help the learner to understand and consequently improve performance.

**Table 4. Example of Balanced or Sandwiched Feedback.**

<table>
<thead>
<tr>
<th>Top Bun</th>
<th>A positive comment that focuses on an item done correctly.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle</td>
<td>Focuses on a comment about something that needs improvement. Include corrective feedback, such as a resource with information or ask a probing question to facilitate learner thinking on the area.</td>
</tr>
<tr>
<td>Foundation Bun</td>
<td>Includes a positive comment about something done correctly.</td>
</tr>
</tbody>
</table>

Although numerous articles exist in publication about the technique of feedback sandwiches, there is a gap in the research literature on the topic. One article that included two studies on the topic of feedback sandwiches was present upon an extensive literature search. Parkes, Abercrombie, and McCarty published a research article in 2013 that describes two research studies they did on the use of feedback sandwiches. The first study had 21 participants and the second study had 350 participants. The researchers used a multi-method approach and quasi-experimental design. Students were surveyed their opinions about feedback sandwiches and this was compared to researcher measures of improved performance. The students reported the feedback sandwiches improved their future performance because as they did the next assignment, they would think about the feedback that they had done an area correctly and what they needed to improve on. They reported using this feedback to improve their performance. However, the researchers reported the students did not improve their performance. In another study of online feedback, Getzlafl et al. (2009) reported that using feedback sandwiches was a helpful instructor behavior. The topic of feedback sandwiches needs more research to study if it is effective or not.

**Does Online Feedback Really Make a Difference?**

With respect to negative outcomes related to online feedback, studies are less common in publication. However, two themes are present in the literature. One theme relates to student perception and the other is about effects of feedback on learner performance.
Student Perception

In a study by Jones and Blankenship (2014) of student perceptions about online instructor feedback, 56 percent of students indicated that positive comments with the feedback were not as useful as comments about how to improve course work. An examination of online student satisfaction by Palmer and Holt (2008) identified instructor feedback for online assignments of high importance to their course experience. Yet, participants reported low satisfaction with the instructor’s feedback performance. This data strengthens the need for instructor knowledge, and faculty development of best practices related to providing online feedback.

Effects of Feedback on Learner Performance

Previously in this article a description of two studies by Parkes, Abercrombie, and McCarty (2013) was given. Although students report the instructor feedback was incorporated to improve their performance, instructors report that the student performance did not improve after receiving detailed feedback. In another study by Espasa and Meneses (2010), 186 graduate students participated to analyze online feedback by instructors to students. Online assignment feedback from the instructor has no relationship to the final course grade (Espasa & Meneses, 2010). Student satisfaction with the feedback received was high. It is noteworthy that the courses in this study do not require students to do assignments within the courses. Students are only required to complete a final assignment; however have the option to complete assignments during the course. In this study, the researchers stress that not all students completed assignments during the course (Espasa & Meneses, 2010). The authors stress that faculty development related to giving feedback in online courses is worthy, despite these findings.

Feedback Timesaving Tips for Educators

Providing online feedback for learners is a time-consuming task that is concerning for online faculty (Bonnel, 2008; Lewis & Abdul-Hamid, 2006). This section includes a description of a variety of tips to save time when giving online feedback. Feedback banks in word processing documents that include frequently used feedback comments are one technique to save time. Cut and paste the remarks from a word processing document into the learner’s paper or online feedback area (Lewis & Abdul-Hamid, 2006). This allows the educator to construct carefully worded, specific, helpful feedback phrases with a positive tone for use.

Some educators use voice technology to provide audio feedback for learners as a timesaver (Lewis & Abdul-Hamid, 2006; Portolese Dias & Trumpy, 2014). The Desire to Learn (D2L) learning platform has audio feedback built in to the assignment dropbox and grading functions. Some educators use MP3 files to provide audio feedback that provides learner and teacher benefit (Todd, 2012). Todd (2012) reports the teacher’s tone of voice can be motivating for learners to make revisions in work for improvement and saves the teacher time. In a study by Wood, Moskovitz, and Valiga (2011), audio feedback was favored to written feedback by baccalaureate and graduate nursing learners in online cours-
es. Participants reported the audio feedback from the instructor had better clarity, was more personal, motivating, and easier to retain than written feedback. In a related study comparing audio and written feedback to written feedback, doctoral learners that received audio and text feedback reported better cognitive development and satisfaction with the instructor (Rockinson-Szapkiw, 2012). Lunt and Curran (2010) reported that learners were ten times more likely to open audio feedback than written feedback. The use of audio feedback is an effective, timesaving way to provide feedback for online learners.

Online educators can provide clear, detailed assignment instructions for learners (Bigatel et al., 2012). Good instructions help learners, but also save time for faculty because the expectations are clear, less questions and clarification are necessary, and thus application is more likely. A best practice for online faculty found in a study by Lewis and Abdul-Hamid (2006) is to include clear instructions and expectations for the assignment. Schwarz recommends using small assignments that build to a larger, final assignment (2012). The learner can incorporate feedback from the small assignments to improve performance, and work up to a big project at the end of the course where they showcase their development. The use of an assignment rubric is a behavior of exemplary faculty (Lewis & Abdul-Hamid, 2006).

Video feedback and synchronized feedback are two more timesaving methods that educators can employ. Video recordings of feedback for learners are timesavers and provide clear, personalized messages for the learner that include non-verbal communications. The use of synchronous, web-based conferencing is one technique that online educators can use to provide feedback. Adobe Connect, Skype, or similar tools are examples of tools to conferencing with learners. Learners report improved clarity in understanding synchronous web-based conferencing feedback (Chung, Shel, & Kaiser, 2006).

**Conclusion**

There are many reasons why giving effective online feedback is an important educator skill. The online educator has an opportunity to create an environment where the focus is on success and enhancement of learning! This forward-focused approach empowers and influences the learner through affirmation, challenging questions to excel (Edwards, Perry, & Janzen, 2011). The ability to provide effective online feedback is a critical educator skill. Therefore, lifelong education for teachers to develop and polish online feedback skills is a worthwhile activity. Best practice includes feedback that is prompt, clear, detailed (Bigatel et al., 2012; Zsohar & Smith, 2009), individualized, and frequent (Gallien & Oomen-Early, 2008), and balanced (Docheff, 1990). Educators may use a variety of medium for delivery of online feedback, such as written word, audio files, videos, pre-set automated feedback, and synchronous web-based conferencing. This article presents evidence-based, practical strategies for educators to use in the online courseroom when providing feedback. These best practices can assist faculty to deliver quality feedback to enhance student learning.
References


Digital Storytelling: Conveying the Essence of a Face-to-Face Lecture in an Online Learning Environment

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Abstract

As the percentage of university-level courses delivered online continues to increase, instructors who rely on storytelling approaches to convey key concepts in lecture-based coursework will likely face the need to translate their oral storytelling modules into one or more formats that are suitable for use in an online learning environment. While in simple cases it may be sufficient to supply text-based transcriptions of stories and narratives or straightforward “talking head” style videos to online learners, more elaborate storylines may require the application of advanced multimedia presentation technologies, often referred to as digital storytelling. In this paper, the selection and preparation of video-based digital storytelling learning modules is discussed in the context of meeting the self-directed learning preferences of students enrolled in a senior-level undergraduate leadership course. An example video produced on the topic of mentorship illustrates how the gap between personalized face-to-face storytelling in a lecture-based course and the less personal asynchronous learning in an online section of the same course may be bridged to maintain student comprehension of the key concepts involved.

Keywords: Digital storytelling, video, self-directed learning, higher education, mentorship.

Within contemporary post-secondary education, it is no longer possible to unequivocally state that the most effective way to teach and the most effective way for students to learn is to have both parties physically meet in a classroom where traditional lecture-based instruction fills the day. Long gone are the days when undergraduate programs are exclusively populated with traditional eighteen to twenty-something year old students who take a full schedule of classes and work less than a few hours per week. Today’s undergraduate student population is significantly more diverse, with a mixture of traditional students, older, returning students, part-time students attempting to balance their schooling with a full-time career, and family-focused students who may be largely consumed by a combination of parental and job-related responsibilities.

In higher education, effective knowledge transfer and retention can be both topic-specific and highly dependent on the situation of the individual learner. Educational venues also span the gamut from traditional lecture-based courses to fully online courses with hybrid variants falling at multiple points in between the two extremes. Thus, in designing and
implementing effective coursework, educators increasingly face a matrix of student needs and wants that include not only multiple learning styles, but also multiple modes of course delivery.

Designing instructional modules that can work well across all of the aforementioned combinations of parameters can be a daunting task, yet it is one that is worthwhile – especially when faced with the prospect of teaching multiple sections of the same course across a variety of venues. This paper explores the development of one type of instructional module, the video media clip based on digital storytelling best practices, that has proven highly effective in a variety of undergraduate business courses. Equally appropriate for use in lecture-based, hybrid, and online courses, short instructional videos can provide direct knowledge, stimulate course discussion on key topics, and encourage learners to pursue further study.

**Storytelling in the Digital Age**

Storytelling is often cited as an excellent method of increasing a listener’s comprehension of complex concepts and ideas (Chung, 2006). Humans are natural storytellers and the ability to convey information through a well-constructed story is frequently mastered at a very early age, adding both form and function to a society’s communications. Once in school, students are typically encouraged to further develop their storytelling abilities through both written and oral assignments while teachers use storytelling as an essential aid in delivering the curriculum (Ballast Stephens, & Radcliffe, 2008).

In discussing storytelling as pedagogy, Coulter, Michael, and Poyner (2007) suggest that storytelling in education is far more than just entertainment since the individual awareness that occurs when the process is done well moves storytelling into the educational content of the curriculum. In an educational setting, good storytelling encourages students to think back and recall previous lessons that helped to build the foundation for understanding the current story (Schank, 1990; Zull, 2002). Similarly, a good story encourages further inquiry and study to learn what happens next – often challenging students to interact more amongst themselves in pursuit of further knowledge (Bruner, 1996). The end result is an increased level of instructor-student and student-student interaction through the storytelling process.

Whereas traditional storytelling methods used in education relied largely on oral communications from instructors to students, perhaps enhanced with basic visual aids, contemporary efforts are moving rapidly into the digital realm with multimedia presentations and other computer-driven enhancements that substantially enrich the storytelling experience for instructors and students alike (Xu, Park, & Baek, 2011; Hung, Hwang, & Huang, 2012). Basing their comments on earlier works by Kang, et al. (2003) and Shin and Park (2008), Xu and co-workers created an all-encompassing definition of digital storytelling as “….storytelling that is conducted using digital technology as the medium or method of expression, in particular using digital media in a computer-network environment” (2011, p. 181). The addition of digital technology, in any of its variations is a significant one that enables storytellers to develop more sophisticated learning modules that include vid-
eo clips, professional music, voiceovers or audio streams from others involved in the original subject matter of the story. Digital technologies allow stories to be reproduced, transmitted and replayed for remote audiences and, importantly, allow students to replay stories multiple times if needed to comprehend the material. This added flexibility increases the value of the storytelling proposition without diluting its foundation in one of the most basic forms of human communication.

As studied by Hung and co-workers, digital storytelling technologies also enable students to take an active role in the storytelling process by participating in creating and documenting their own project-based digital stories (2012, p. 369-71). The authors observed that the project-based approach using digital technologies assisted students in pulling together their own observations and story elements in a logical format, but it also assisted them in interacting with other learners as they worked collaboratively to understand how best to deliver their materials (2012, p. 376). Moreover, knowledge documentation, archiving, and presentation for the class as a whole increased substantially in terms of thoroughness and quality when the digital storytelling process was expanded to function as a collection of the students’ individually compiled works. When students have direct input into the digital storytelling process by creating their own stories, additional benefits are provided beyond those of the instructor, alone, employing digital storytelling technologies. Supporting studies available within the literature include those of Xu et al. (2011), Haigh and Hardy (2010), Reitmaier, Bidwell, and Marsden (2010), and Jonassen, Peck, and Wilson (1999).

**Connection to Self-Directed Online Learning**

While the majority of the studies referenced above employed digital storytelling in traditional, lecture-based classroom settings, the technology is by no means limited to that single educational venue. Students enrolled in courses taught online, for example, can benefit greatly from instructional approaches that include learning modules based on digital storytelling processes. In online learning situations, video clips, multi-media presentations, audio files and other similar digital tools represent the most effective and efficient ways to bring the presence of the instructor to the students who are studying in a manner that is both asynchronous and frequently isolated as compared to their lecture-based classroom counterparts. Numerous studies within the literature document the successes of digital storytelling in online learning either in a uni-directional mode of instructor-originated content or in a bi-directional mode where traditional university-age students and also adult learners are responsible for generating a portion of the digital content as part of their assignments and projects (Jenkins & Healey, 2012; Palacios, 2012; Rossiter & Garcia, 2010; Rigney, 2010).

Research by Lindgren and McDaniel (2012) suggests that it is also possible to drive student learning beyond what is possible in a lecture-based classroom using advanced digital storytelling technologies and associated computer applications. The authors were able to demonstrate increased student comprehension of course concepts and increased satisfaction with coursework by introducing a combination of advanced computer visuals in digital storytelling modules and personalized interactive instruction where students could
choose how to approach and master the concept under study. Their argument that these features take online instruction in a direction that differs from traditional lecture-based formats is intriguing and worthy of further examination. It would be similarly interesting to test their approach in a traditional lecture-based course where the advanced digital storytelling modules are used to supplement regular classroom instruction.

A review of the research in this area published a year earlier by Tsai, Chuang, Liang, and Tsai (2011) is complementary to the work described by Lindgren and McDaniel (2011). Tsai and coworkers (2011) noted that self-directed success in a traditional lecture-based learning environment, itself, is not an accurate predictor of self-directed success online (Tsai et al. 2011). It is often necessary for self-directed learning skills to be “rebuilt” in online learners due to the different modes of delivery used for course content and the potentially different ways that learners access supplementary resources. The digital storytelling approach has found good success both with traditional university-age students and with older, adult learners in these situations by linking learning content with events familiar in learners’ everyday lives (Chu et al., 2012; Chu & Tsai, 2009). Learners find grounding in familiar situations, stories, and/or events and are more likely to begin to form their own personally defined (and thus self-directed) learning spaces to fill in skills and knowledge that they lack. Such learners can rely on many of their attitudes and approaches to learning from traditional lecture-based learning environments to help them in this process, but they must also possess sufficient Internet skills and information evaluation skills to be able to navigate comfortably in the online learning environment (Lai, 2011).

Commensurate with the findings of these researchers, there is additional evidence within the literature to support that online learners may gravitate toward interactive learning modules, including advanced forms of digital storytelling, because these learners tend to prefer self-directed educational opportunities. Self-directed learning is a concept that was defined by Knowles as “…a process in which individuals take the initiative with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating outcomes” (Knowles, 1975, p. 2). The foundation of self-directed learning lies within the constructivist theory of learning whereby “…the learner ‘constructs’ his or her understanding of the environment from his or her interactions with it rather than the environment creating new stimulus-response connections (Svinicki, 2010). Self-directed learners control their own learning processes while “[the] instructor simply helps the learner by providing a rich environment from which the learner can learn” (Svinicki, 2010, p. 74).

Looking more closely at the ideal learning environment for self-directed learning, it will be one with both sufficient freedom and sufficient resources to satisfy the curiosity and drive of the learner. Researchers have shown that self-directed learning success is enhanced if learners are able to define their own learning spaces within the larger environment of the course (Pata, 2009; Lai 2011). The optimum environment for encouraging self-directed learning will be one where multiple routes are available for learners to use in creating their preferred pathways between Point A and Point B. Advanced forms of digi-
tal storytelling, often with interactive components, should be particularly appropriate for learners preferring a more visual approach with access to graphical data, pictures, flowcharts and other similar aids. As noted by Pata (2009), instructors should gather feedback on the resources most useful to learners and optimize the overall resource blend to meet learner needs through future iterations of a course.

The use of video-based learning modules in this context has been shown to enhance student learning in an online environment, both by objective measures (Donkor, 2010) and by anecdotal information gathered from end-of-term qualitative student surveys (Donkor, 2011). While there is little disagreement in the literature regarding the overall value of adding video-based learning modules to online courses, an important watch-out suggests keeping topics focused on concepts and information transfer as opposed to problem-solving (case studies) where text-based materials may still be more successful at encouraging deep thinking (Roy & McMahon, 2012, p. 432-3). Preliminary data indicate that the success of problem solving-type videos may be enhanced by moving from unidirectional videos where learners watch and listen to content to bidirectional or interactive videos where learners actively participate by answering questions throughout the video session (Vural, 2013, p. 1322).

**Digital Storytelling in an Undergraduate Leadership Course**

The present study originated from a need to develop new supplementary learning materials for the online version of a popular senior-level undergraduate leadership course. The course had been taught successfully for many semesters in a traditional lecture-based format and had routinely included a number of personal experience stories on selected leadership topics – delivered from my viewpoint as the instructor. Students routinely commented on how the stories had helped them to understand the topics involved and learnings from the stories frequently were fed back through students’ written assignments in the course. When the online version of the course was designed and implemented, many of the stories were converted to text-based supplemental readings while others were captured as relatively standard video clips of me, as the instructor, telling the stories to a class.

While overall student success in the new online version of the leadership course compared well to that of students taking the traditional lecture-based version of the class, it was noted that online students referred less frequently in their written assignments to the specific topics contained in the stories, made available to them through transcribed texts and/or simple “talking head” narratives. Given the high popularity of the stories when recanted face-to-face, it was decided to explore whether or not an enhanced video experience, similar in intent to the advanced video modules described by Lindgren and McDaniel (2012) could increase online student interest in the topics to the level seen in the lecture-based sections of the course.

Due to the existence of a reasonably large portfolio of stories that had been shared in the lecture-based class, it was decided to proceed with a single advanced video, selected with student input. Once the video was produced, student input would again be used to evalu-
ate whether or not the video captured the essence of the story. Table 1 lists the top seven story topics that were selected by students who had participated in a lecture-based version of the leadership course. All students had experienced listening to the stories firsthand and were therefore well-qualified to vote on which story would form the prototype for the advance video production. Topics are listed in rank-order by student preference (N=50 students).

Table 1. Leadership Story Topics for Advanced Videos.

<table>
<thead>
<tr>
<th>Student Rank</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mentorship</td>
</tr>
<tr>
<td>2</td>
<td>Leading a Team</td>
</tr>
<tr>
<td>3</td>
<td>Managing Difficult Employees</td>
</tr>
<tr>
<td>4</td>
<td>Communicating with Customers</td>
</tr>
<tr>
<td>5</td>
<td>Setting Goals</td>
</tr>
<tr>
<td>6</td>
<td>Creating a Shared Vision</td>
</tr>
<tr>
<td>7</td>
<td>Setting/Managing Budgets</td>
</tr>
</tbody>
</table>

Although all of the story topics listed in Table 1 had originally been carefully developed to blend leadership theory and practice with solid examples, it was actually not surprising to me that students selected “mentorship” as the recommended story for conversion to an advanced video learning module. This particular story was developed around a very special experience that I had a number of years previous and was always immensely popular with the students. It was also a topic that had not translated well into a simple “talking head” style video – most likely due to not capturing the intensely personal nature of the interaction involved.

**Advanced Video Strategy and Production:**

*Creating the “Nice Old Guy” Video*

To understand the strategy behind how the prototype video learning module was created it is first necessary to know the storyline that formed the basis for the script. While attending graduate school in the early 1980s, I had occasion to attend a banquet where the featured speaker was Nobel Laureate Dr. Linus Pauling. As luck would have it, I ended up seated next to Dr. Pauling for dinner. Not being in the sciences, I had only a general lay-person’s knowledge of his background, but I found him to be a wonderful conversationalist. As we talked, he expressed a tremendous amount of interest in my background and in where I wanted to go with my developing career. He talked about his own career philosophies and offered me some suggestions – all focused on becoming the best that I could be. It was a fascinating conversation that I have cherished to the present day.

Dr. Pauling’s comments to me that evening sparked much of my own interest and efforts over the years in mentoring students at the university level and also formed the basis for the story that I related to each lecture-based leadership class. In telling the story, I kept the identity of my famous mentor a secret until the end, and the students would always
remember how the story built toward that revealing conclusion. It was this type of story progression that I endeavored to capture in the prototype advanced video learning module for online use.

The video storyline was constructed as a ballad about a “nice old guy” who befriends a university student at dinner and offers career advice against a background of always working to help others succeed. A video montage of scenes from Dr. Pauling’s career plays in the background while a musician sings the ballad to the accompaniment of a simple ukulele score. Dr. Pauling’s identity is not revealed in print or in the lyrics until late in the video to maintain an element of surprise, although to scientists viewing the screen, his identity becomes more quickly evident.

The video was produced in collaboration with a professional musician, Mr. David Cassel. I provided the storyline and lyrics while Mr. Cassel was responsible for the musical score, performing the ballad, and creating the video montage that appears in the background. The video length is 4:44 minutes and it may be viewed in its entirety on YouTube® at http://youtu.be/gIoM4oYHB9s. Figures 1-4 illustrate selected scenes from the finished video. A script of the full lyrics is available from the author.

Figure 1. Video begins: Title, introduction and chemistry background.
Figure 2. Video progression: Partial identity revealed through photo and DNA structure.

Figure 3. Video progression: Dr. Pauling’s two Nobel Prizes shown.
Discussion

The “Nice Old Guy” video learning module was first revealed to students in a section of my lecture-based leadership course. These students had previously heard the face-to-face version of the story and I was most interested in learning their feedback on whether or not the video captured the intent and spirit of the story before using the video in online sections of the course. Overwhelmingly, students approved of the new video and liked the way that the message was delivered in a fun to watch format, but still contained the mentorship message in a way that could not be missed. As in my own case when I first met Dr. Pauling, most of the students were not scientists and were not overly familiar with his accomplishments. Thus, the “slow reveal” of his identity during the video maintained strong interest and encouraged them to watch through to the conclusion.

In terms of constructive feedback, the students stated that the one thing they would miss if they were in an online section of the course and only viewed the video was the opportunity to ask questions after the story, such as additional details about Dr. Pauling, or more specifics regarding how his mentorship had influenced me through the years. This point was well-taken since we normally had a fairly lengthy and robust classroom discussion as a follow up to the narrative version of the story. This feedback would be addressed when the video was introduced to the online course sections. As an additional point of feedback, the students suggested that if I made other advanced videos based on other stories from the lecture-based leadership course that I should try to maintain a gen-

Figure 4. Video ends: Friendly photo of Dr. Pauling and recap of mentorship message.
erally common theme or format. They felt that such continuity would help learner comprehension, much as other recurring elements of the course, such as supplemental readings, assignments, etc., shared common themes for similar reasons.

To date, the new advanced video learning module on mentorship has been used in online sections of the leadership course for two semesters. Student feedback on the video has been excellent. To address the feedback regarding lack of a discussion period after the story, I implemented two new course features. First, a series of questions designed to stimulate discussion was added to the interactive online course forum. Students received points for posting their opinions to the forum and also for commenting in a peer-to-peer mode on the opinions of other students. As the instructor, I was an active participant in these discussions to answer questions or offer supplemental information as needed. Second, the topic of the video was introduced in one of the live chat sessions associated with the course. Students were able to interact in real time with their peers on what they learned. Both features generated strong student participation, with the discussions capturing a very similar feel to that of the in-class discussions held in the lecture-based version of the course.

**Suggestions for Future Research**

Results generated from the production and implementation of the advanced video learning module on mentorship have been very positive, but it is important to note that this first video represents the initial step in a larger research effort to develop and incorporate a variety of multi-media learning modules into my online courses. Future research efforts are focused on a combination of activities that may be classified into three general areas.

First, my intent is to develop several additional advanced videos using topics from those outlined in Table 1. Each video will involve a story taken from the lecture-based leadership course and, while the message delivered will be similar in scope to that of the “Nice Old Guy” video, I plan to experiment with different musical genres, different styles of lyrics and different background videos. For example, the “Nice Old Guy” video used a “folk ballad” style of music and lyrics. Plans moving forward include using themes from rock, country, reggae and hip-hop to accompany different types of subject matter.

Second, all results to date have been qualitative in nature. While qualitative assessment is extremely helpful in the early stages of a project because it provides information and direction on how to improve materials, I am a strong proponent of evaluative rubrics and quantitative assessments to more rigorously measure the effectiveness of new teaching initiatives. Once several advanced videos are in hand and have been reasonably well optimized, my intent is to set up a controlled study comparing student comprehension of the concepts involved as delivered in a conventional storytelling manner within the lecture-based sections of the course and as delivered via the video learning modules within online sections of the same course. Results from student examinations and writing projects on the selected concepts will provide the data necessary to undertake a quantitative assessment of the success of the advanced video storytelling approach.
Third, my intent is to ultimately move in the direction of interactive video learning where students viewing the video learning modules will be able to stop and interact directly with the material to further maximize comprehension. This effort, still under development, is likely to explore ways that students may be able to respond to the videos online through their own video creations or perhaps create and explain their own “video playlists” from the available material much as individuals assemble their own preferred audio playlists from music downloads available online. Student project grades in this example could be based on explaining the choice made of what material to include and in what order they are delivered to fellow learners.

The process of developing and implementing advanced video-based learning modules has the potential to substantially enhance online learning courses. Due to the self-directed learning preferences of many online learners, there is a natural gravitation toward approaches that allow personalized interaction with course materials. Further research into how best to maximize this type of interaction using the video-based storytelling approach is definitely warranted.

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A Conceptual Framework for Teaching Statistics from a Distance

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Abstract

This article discusses important considerations for teachers who teach or may be thinking about teaching statistics online or in a hybrid/blended format. Suggestions from previous research and practical teaching experiences are examined. Moreover, the latest recommendations from the literature are considered in the context of teaching from a distance, which includes the 2014 curriculum guidelines published by the American Statistical Association (ASA Curriculum Undergraduate Guidelines Workgroup, 2014) and the Guidelines for Assessment and Instruction in Statistics Education (GAISE) College Report (2005; 2012). The paper concludes with suggestions about essential next steps to further advance our understanding of teaching and learning in this environment.

Keywords: Online Pedagogy, Statistics Education; ASA; Instructional Design; GAISE.

When I think about how I approach teaching, I consider my 20+ years of teaching both in and out of the classroom, my formal training in mathematics and statistics, what I’ve both read and contributed to the scholarly literature about teaching and learning, how students learn in general, and specifically, how students learn mathematics, statistics, as well as how they problem-solve. “What” I teach, “how” I teach it and “why” I teach it (that way) is also based on my own personal, social, and cultural experiences. Additionally, I give careful thought about what I want my students to be able to do once they leave my classroom. Finally, I also consider something very important -- what makes sense.

Hopefully, this kind of thinking or “philosophy” about teaching sounds familiar to you as you begin to approach teaching a new course. I remember my very first victims -- approximately 120 undergraduate students enrolled an introductory statistics course. As a ⁴th year ABD graduate student, I was not only learning and advancing my own knowledge in statistical methods, but I also had the challenge of determining how to best teach what many students find to be very “difficult and abstract” concepts. After many failed lectures and much thought, one solution at that time was to integrate different forms of technology into my lectures and other course materials.

And that is how it started for me. In developing my pedagogical skills as a teacher, I found that supplementing my instruction with technology in my statistics courses offered some positive benefits. I have dedicated most of my teaching career to the use and study

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of various forms of technology in the statistics classroom, including using technology to teach in an online and hybrid environment. The purpose of this paper is to present some key factors to consider as you prepare to embark upon the world of teaching an introductory statistics course from a distance. Because previous research has shown that teachers across different disciplines (i.e., business statistics, engineering, educational, mathematical, etc.) struggle with similar challenges, these suggestions can be helpful to any teacher (i.e., newbies, the less-experienced, seasoned teachers, etc.) -- in any discipline or at any level of education (Mills & Raju, 2011). Additionally, I consider this framework based on the latest recommendations from the literature, including the 2014 curriculum guidelines published by the American Statistical Association (ASA Curriculum Undergraduate Guidelines Workgroup, 2014) and the Guidelines for Assessment and Instruction in Statistics Education (GAISE) College Report (2005; 2012). These are two of many published reports in recent years that document a “shift” or evolution in statistics teaching and learning.

**A Shift for Change**

In the last couple of decades, there has been a concerted effort to develop and improve students’ statistical literacy and thinking skills at every level of education. Training for teachers, particularly at the introductory level, as well as recommendations regarding curriculum and pedagogy are increasingly evident in the statistics education literature today. Following the NCTM Data Analysis and Probability Standards (1989; 1991; 2000) targeted for students at the Pre-K-12 level, the College Board (2006) also published standards that focuses on improving students’ data analysis and probability skills for students entering college. Additionally, the GAISE: College Report (2005), which was revised in 2012, presents six recommendations related to instruction and assessment, specifically for instructors teaching at the introductory level. These include:

- Emphasize statistical literacy and develop statistical thinking.
- Use real data.
- Stress conceptual understanding, rather than mere knowledge of procedures.
- Foster active learning in the classroom.
- Use technology for developing conceptual understanding and analyzing data.
- Use assessments to improve and evaluate student learning.

Most recently, the ASA (2014) published curriculum guidelines as well as suggestions for pedagogy for undergraduate programs in statistics at both the introductory and more advanced levels of study. They listed four key points:

- Increased importance of data science (i.e., improve and develop computing skills).
- Real applications (i.e., work with complex data, design studies).
- More diverse models and approaches (i.e., practice model-building and assessment).
- Ability to communicate (i.e., communicate complex statistical methods and results).
Their pedagogical recommendations included:

- Emphasize authentic real-world data and substantive applications related to the statistical analysis cycle.
- Develop problem-solving skills.
- Present problems with a substantive context that is both meaningful to students and true to the motivating research question.
- Include experience with statistical computing and data-related skills early and often.
- Encourage synthesis of theory, methods, computation, and applications.
- Integrate training in professional conduct and ethics.
- Offer frequent opportunities to refine communication skills, tied directly to instruction in technical statistical skills.
- Incorporate regular assessment to provide authentic feedback.

Thus, as we develop our modern introductory statistics course from a distance, it is important that we also consider these recommendations, particularly if our goals are to provide students with the necessary statistical skills they will need to compete in our ever-increasing, data-driven society.

The next section presents important considerations for your online, hybrid, or distance course based on my own practical teaching and research experiences. Additionally, the suggestions and recommendations from the literature provide the basis for this conceptual framework. Course organization, instructional design, content, pedagogy, the appropriate uses of technology, and assessment are all discussed within the context of a learning theory framework. But before these ideas are discussed, I’ll start with some questions and concerns I had and you might have in the initial planning stages.

A Framework for Teaching (and Learning) at a Distance

When I initially began the design of my online classroom, it was important for me to reflect upon my teaching and ask many questions. I knew that I had many positive learning experiences in my face-to-face classroom; therefore, one of my goals was to “mimic”, as much as possible, the successful teaching and learning experiences I had fostered in that classroom environment. Therefore, the first important question I had was about how students would learn in this new format, so I needed to reflect more on the following questions: How do students learn in general? Specifically though, how do they learn statistics concepts and what would be effective ways to facilitate this online? Other questions included: What kind of technology will I use? Will it necessarily enhance the learning process? How will I facilitate learning every week and what teaching strategies will be most effective? How will I motivate students to “participate”? What about tests, should I have them? If so, how will I curb academic misconduct? How will I handle students who are struggling to learn in this format? How available can I be for students? How will I know if students are really learning?
Well, I don’t admit to having all of the answers, but I believe the components discussed next will guide you in the right direction. Because you will have to physically build the course in order to deliver it, course organization and instructional design features will be discussed first.

**Course Organization and Design**

The design of the physical environment itself is equally important as content and pedagogy. In order to adhere to pedagogical recommendations, such as using real data, developing problem-solving skills, and refining communication skills, each of these objectives might best be served if housed in separate areas on your website. Therefore, I recommend that each chapter’s (or topic’s) learning activities are housed in separate folders, each following the same sequence of presentation. For example, students might access each chapter (or objective) with online notes presented first, followed by lecture videos, then SPSS videos (or an area for practicing computing skills), then “homework” problems, then assessment, etc. This is the area where your most important content will be stored. Therefore, when building these learning activities, specificity to detail and redundancy are deliberate and intentional design strategies that should assist in directing students and providing them with the know-how and confidence of what (exactly) to expect each week. If the folders and outline of activities look different from week to week, this will confuse them. Use the same style of folder for each chapter, same font of writing for the headings, and same order of presentation. If any deviations are needed from this routine, they probably should be introduced gradually (i.e., for subsequent chapters).

Next, I have found it very helpful to guide students as soon as they enter the course, for example, by way of an announcement (i.e., Subject line: START HERE!!) or even a personal welcome video. In this announcement, a brief overview of how the course is physically designed or set up is key. At the end of this announcement, I point students to the very next step in their learning journey and continue to “road map” their first day in the course as necessary (I do it for all learning activities for that entire first day/chapter/topic). I also include or post these same instructions or any other important information in a separate email to students, in an online announcement AND I post it in other relevant areas on the website. Remember that in an online environment, students may miss notes or instructions easily, therefore, redundancy is key.

**Content and Pedagogy**

“What” to teach in the new modern era is also being discussed. According to the 2014 curriculum guidelines, our content should focus more on providing opportunities for students to explore real-world applications, as opposed to analyzing textbook data. This includes designing studies and developing computing skills through statistical analysis software, manipulating data in various ways, and performing algorithmic problem-solving when necessary. “How” to best facilitate the content is another important but now qualitatively different consideration if teaching and learning takes place at a distance. In my opinion, this is where you have to rely on learning theory, your experiences and in-
stincts as a teacher in the face-to-face classroom, and the pedagogical recommendations from our colleagues. But exactly how depends on how you view teaching and learning.

The theory of constructivism provides one perspective regarding how students learn in general and has been discussed frequently in the statistics education literature (Mills, 2003). This theory suggests that students learn by actively building or “constructing” their own understanding of new concepts and ideas, and thus, begin to make sense of any new knowledge. This new knowledge is attained internally, by transforming, organizing, and reorganizing previous knowledge (Cobb, 1994; Greeno, Collins, & Resnick, 1996), as well as externally, through environmental and social factors that are influenced by culture, language, and interactions with others (Bruning, Schraw, & Ronning, 1999). Often times, this new knowledge may be incompatible or may conflict with previous (or faulty) knowledge, sometimes called misconceptions. Because students tend to have a difficult time understanding introductory statistics concepts, misconceptions are common.

Furthermore, research also suggests that when learners solve problems, they both understand and view the problem in different ways. They also apply different strategies to solve these problems. Hence, online pedagogy that facilitates learning based on a solid foundation of how students learn is an area that requires further reflection and thoughtful consideration. An awareness of student learning outcomes and how to best measure and assess student learning are two other significant challenges. Targeted pedagogical approaches for the online statistics classroom that are grounded in learning theory will be considered next.

Implementation

Once content is established, varying instructional methods is one way to ensure that the needs of all learners (i.e., diverse learners) are met. One of the most critical recommendations is to expose students to authentic research scenarios (ASA, 2014). In my online classroom, we begin with short video lectures that discuss and explain the introductory concepts and methods for a particular topic (I also point students to further and advanced readings). These videos might include what you typically discuss in class, including handwritten formulas, simulation exercises that demonstrate concepts, etc. In terms of simply presenting information, “chunking” is a good strategy if large amounts are necessary, which is typically the case in a course for beginning statistics learners. For me, this involves creating chunks of related lecture materials along with interactive exercises or videos to supplement and enhance the lecture topics. In general, I try to make sure that the lecture videos are short in time length (2-10 minutes) so that students are not overwhelmed with too much passive learning time. This will be discussed later in assessment but sample questions might also be included during or at the end of these videos to test their understanding. Graphical and tabular displays are other pedagogical approaches that can serve to accommodate our visual learners.

Next, these learning activities are then followed by a “how-to” video related to the use of technology, whether that is to analyze data in a software program or other computing exercises (i.e., practicing skills, manipulation of data, simulating data, etc.). The data from
the lecture videos are typically utilized in order to maintain consistency throughout each topic. As mentioned earlier, tabular and graphical displays and simulation applets can be helpful for our visual learners, since different forms of displays can be used to illustrate the same or particularly challenging concepts. Furthermore, I rely on technology in my statistics online classroom for a few other important reasons. First and most importantly, it is used in my classroom to accomplish computational tasks more quickly and efficiently, thereby freeing students to focus more on conceptual understanding. Using SPSS for example, to calculate and report the Pearson correlation coefficient for a data set is less computationally burdensome, and allows more time for discussions and explorations related to magnitude, direction, interpretation, etc. Related to this, technology can be used for students to practice and rehearse calculations when necessary. Obviously, video can be particularly helpful in demonstrating how to solve math or statistics problems (step-by-step) for refresher purposes. For beginning students, these tasks may be more of a priority and can be accomplished as students deem necessary.

The use and type of technology, however, should be chosen wisely in the online classroom. Selection of technological tools and just how much to use in your online classroom should be given careful consideration. What specifically will this tool assist in helping your students to learn? Might they encounter technical difficulties? Will they be able to understand it on their own or will using it while working in a group help? These questions are also of more interest for students learning at the introductory level.

After the technology exercises, the students are then directed to a new research scenario that they would analyze independently, work in teams if required, participate in the discussion threads, and practice writing up the results in a professional format. This normally takes place in our discussion area and this is an ideal opportunity to create or use ‘real-life’ scenarios since this makes learning statistics more meaningful. From a faculty perspective, this latter practice presents a unique opportunity to integrate research or real world scenarios into a formal classroom setting.

Therefore, the discussion area is where I “teach” (Note: I do not allow my TA to field these content-threads). I prefer to answer content-related questions from students, and form groups of students to work on real-world applications of the methods collaboratively. Thus, creating opportunities for students to interact with me as well as with their colleagues ideally should operate as the heart of any online course. This includes setting aside time periodically to connect with students synchronously through video conferences. During these conferences, I will use my “pen-mouse” to draw pictures, write on selected output, or answer specific problems that require calculations from students.

Specifically though, it takes a conscious and concerted effort to teach by (mainly) writing using the discussion forums. My goal is to facilitate the learning, but it does not always have to work out that way (i.e., it may feel more lecture-like). I attempt to guide students’ understanding but at the same time, engage them in a multitude of misconception-debunking processes. For example, allow them to explain or justify the use of a statistical test, require that they provide evidence as to why they rejected the null hypothesis, and model how to make a final conclusion within the context of a research scenario. They
should be able to generalize, apply and represent the content and topics in ways that relate back to their everyday experiences (Perkins & Blythe, 1994) and connect the topics and concepts back to their broader learning and research goals (Knapp, Shields, & Turnbull, 1995). Additionally, given the variability in how students problem-solve, I encourage students to approach and solve problems in different ways (which can also be modeled and incorporated in the lecture videos for time-saving purposes).

In summary, when students are learning at a distance, linking the content and lecture materials to assignments and related discussions keeps everyone on similar activities and attempts to maintain some consistency in learning (ideally during the same time period). Utilize opportunities to teach the same concepts in different ways with different forms of technology. Reinforcement of the concepts is possible in the discussion area with practice assignments, a sensible selection of technology tools, and through review announcements and meetings with students. The next important step is to link these activities to assessments.

I mentioned how embedded assessments can serve to provide students with valuable formative feedback during “instruction” time. Additionally, online quizzes can be created so that they can address the formative learning process as well as how a student is performing overall. This usually takes more time upfront to implement but it is well worth it during feedback time. You will probably find that students tend to do better on exams and it will save you time in the long run. In my online classroom, students take weekly online quizzes that are 1-10 questions in length, which has two distinct advantages: First, there is very little time related to construction of a short quiz. I usually ask the most important questions that I want my students to “take away” from a lecture. Second, you (and the student) will have some important but early feedback on their understanding and performance. Besides, the mere mention of weekly quizzes alone keeps students on their toes!

Finally, in the latest report revised by GAISE (2012), there are concrete projects, learning activities, and related assessment instruments for each of their six recommendations related to instruction and assessment. Appendix A offers specific examples to consider, for example, related to the Central Limit Theorem. Appendix B provides sample assessment items to include (and avoid). Appendix C discusses an example using technology while Appendix D offers information on “naked, realistic, and real” data. These might be worth investigating as you select your online learning activities.

**Tie it all Together**

Considering all of these recommendations, one of the most important strategies I used to tie all of these components together successfully draws from another “old-school” approach to reinforcing learning – the behaviorist model. This approach is extremely helpful particularly in the online and hybrid environment. I mentioned it earlier but it is so critical when you are teaching in one corner of the world and everyone else is learning from everywhere else. This notion of repetition I cannot emphasize enough. Provide weekly and/or topical reviews. For instance, during short class or group videoconference meetings, I always begin each session with a short review. Additionally, during discus-
sion downtime or periods of limited contact with me, I send voice emails explaining or clarifying difficult concepts that I know from my face-to-face classroom experiences may be giving students trouble. I mentioned this earlier -- posting the same or similar information in different areas on the website in the event that students miss important material or announcements posted in one place. For example, an important first day announcement might also be emailed. (This will cut down on the influx of email in your inbox about the logistics of the course as well.). Additionally, advanced organizers are helpful at the beginning of course lectures and any time there is an opportunity to link previous concepts to new concepts, this will provide another way to facilitate learning. Finally, linking examples from the lecture, to technology activities, to discussions assists in reinforcing important concepts. If you know like I know, repetition of concepts and ideas is critically important in a course such as statistics!

Other Factors Matter

Certainly many other factors come into play (and this framework only serves to assist in your initial thoughts). One of the most common complaints I have (and have heard from my colleagues) is related to the amount of time it takes to teach from a distance. If the goal is for students to leave the classroom with meaningful learning experiences, then the amount of time students interact with one another and with the instructor can make a significant difference. From the instructor’s perspective, that takes time to plan, manage, and evaluate. Let’s be honest -- it is difficult to manage every discussion thread within a reasonable amount of time, so that topics don’t go off into a ditch. When technology fails (i.e., the server goes down, technological problems on your or the student’s end, etc.), the time it takes to resolve these issues will also easily cut into your time. And finally, because I teach a two-part course sequence (i.e. Statistics I, Statistics II), I continue to have concerns about what it is that students are really learning and whether they will be able to apply their skills after the course is over.

What’s Next?

Over the next few years, ASA (2014) reports that improving faculty development, engaging with two-year colleges, reassessing the introductory statistics course, exploring certification for bachelor’s degrees, surveying graduates and employers, and periodically reviewing the ever-changing discipline of statistics should be areas to explore further. To that list, I would also include how we might best deliver these courses using technology and specifically, at a distance.

Because I’ve been teaching statistics from a distance for almost 15 years now, I have read and discussed with my colleagues the types of online statistics courses they are delivering. Some are simply traditional courses “housed” on the internet with virtually no or little instruction or direction from a teacher to courses in which students are overwhelmed and inundated with learning activities and discussions -- to a fault. Other courses have students involved in these activities somewhere in between. In any of these cases, there is still a need to focus not only on how to teach these courses from a distance, but also the
extent to which specific teaching practices are effective in best facilitating student learning.

As a result, in the near future I believe more attention should be devoted to these two areas -- emphasizing more on what students are learning in these courses and what instructional practices best facilitate learning. In particular, formative assessment measures that help to track students’ understanding can be very informative for teachers, and they can also be useful tools in identifying students early on who are struggling in their courses. They can be helpful in pinpointing where students need to focus their efforts. The Adobe Captivate software is an example of eLearning software in which embedded quizzes and assessments can facilitate this type of learning and feedback. It works in conjunction with many learning management systems, it does not require any programming, and the content and program is flexible enough so that it can be utilized for many different mobile devices.

While we continue to improve on teaching and learning in this environment, empirical research on what students are learning is another important concern. My questions have to do with what teachers should be doing: What teacher “behaviors” contribute to better learning experiences for students? Students should be “active” in a course but what are the most effective learning activities students might be engaged in and what is an optimal (and realistic) balance of the amount of student-to-student or student-to-teacher interaction (without the risk of teacher and student burn-out)? Finally, how do students taking online statistics courses perform in subsequent courses?

In conclusion, statistics teaching and learning has evolved in many ways, specifically with the number of courses being offered at every level of education today, the changing needs in curricular, the impact technology has had on the field, and the continuing need for teacher training. I believe we have made great strides in how to teach a course like statistics online but for me, there are still more questions than answers. What I do know now for sure though is that this type of teaching and learning is here to stay. Experience is the best teacher, even for the most seasoned face-to-face statistics teacher. There is no short-cut, faking it, or easy answer in “good” teaching in this format. Therefore, I look forward to learning more from the students in my classes as well as reading more about my colleagues’ online teaching experiences in the literature. I hope my suggestions will help you as you plan and teach your online course. Until then, and as I sign-off in my classroom regularly, “See you online!”

References

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http://www.amstat.org/education/gaise/
http://www.amstat.org/education/curriculumguidelines.cfm
Class Room Seminar and Journal Club (CRSJC) as an Effective Teaching Learning Tool: Perception to Post Graduation Pharmacy Students

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Abstract

Theory and practicals are two essential components of pharmacy course curriculum; but in addition to appearing and passing examination with good score grades, pharmacy post graduation (PG) pursuing students are essentially required to develop some professional skills which might not be attained solely by conventional class room programs. This article aims to propose a contemporary Class Room Seminar and Journal Club (CRSJC) model and explains potential benefits of implementing the use of various review and research articles published in reputed journals and periodicals through this model in order to study the syllabus topics in depth and upgrade the knowledge, quality and standards of postgraduate pharmacy students.

Keywords: Seminar, journals, journal club, teaching learning tool, presentation.

Education is a process, the main objective of which is to bring certain positive behavioral changes in the learner. There are three important ingredients for education—objectives, teaching-learning activities and evaluation. As a blueprint can tell the engineer how the output will look like, the educational objectives tell the teacher what is expected from the learner at the end of the process. Teaching involves all such activities and processes, which help the learners to facilitate their learning capability by acquiring skills in thinking, feeling and doing. Always, teachers acted as a source of information and through teaching they transmitted the information in their intellectual stocks to learners. Throughout history, teachers played an active role in the educational process. But when the emphasis was shifted from the teacher to the learner, the teacher has become less of a transmitter of information and more of a facilitator of learning. With this new role of the teacher, the overall responsibility and functions of the teacher in the educational process have increased tremendously (Ananthkrishnan, Sethuraman & Kumar, 2000). Learning is always a dynamic and voluntary process taking place in the mind of the learner. Acquisition of knowledge involves thinking on the part of the learner and active participation in the form of questioning and discussion by the learner. Post graduation in any stream or discipline requires expertise pedagogical guidance in order to not only develop learning skills but also to built in and develop professional attitude which is one of the most essen-

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tial components required in the student when he/she faces the actual pharmaceutical market.

One of the commonly used communication assessment tasks in science/paramedical/medical education is the oral presentation of a published research article, commonly referred to as a “journal club.” The concept of journal club originates in the medical profession and dates back over 150 years (St. Pierre, 2005). Linzer describes a journal club as “a group of individuals who meet regularly to discuss critically the clinical applicability of articles in the current medical journals.” (Linzer, 1987). Given that a journal club provides an excellent forum for keeping healthcare professionals abreast of literature pertaining to their practice, improving understanding of research design and statistics, and teaching critical-thinking skills, it is widely used in medical, nursing, and pharmacy classroom and experiential education settings (Heiligman, 1991; Tibbles & Sandford, 1994; Kirchoff & Beck, 1995; Elnicki Halperin, Shockcor, & Aronoff, 1999; Dirschl, Tornetta, & Bhandari, 2003; Sherratt, 2005; Thompson, 2006; Schwartz, Dowell, Aperi, & Kale, 2007; Deenadayalan et al, 2008). It has also been reported that problem based learning and tutorial small group discussions could be valuable educational tools (Saito et al, 2007). Journal clubs are considered particularly beneficial to learners pursuing higher education, encouraging students to engage with primary literature and to interpret and contextualise recent scientific findings (Glazer, 2000).

Journal club participation has many other benefits, including heightening research awareness, strengthening critical analysis skills (Alguire, 1998; Kellum, Rieker, Power, & Powner, 2000; Linzer et al., 1988; Seff & Hale, 1988; Sheehan, 1994), improving professional reading habits (Alguire, 1998; Linzer et al, 1988; Sheehan, 1994), keeping abreast of the current literature (Sheehan, 1994), and facilitating research and evidence-based practice (Kirchhoff & Beck, 1995; Tibbles & Sanford, 1994), improved presentation skills in educational settings (Davis et al, 2014). Journal clubs that are inter/multidisciplinary are desirable to promote a shared knowledge base, greater appreciation for discipline-specific insights (Kirchhoff & Beck, 1995), and collegial relationships among the participants (Hunt and Topham, 2002; Sierpina, 1999). The literature on journal clubs consists mainly of descriptive studies, research articles, and review articles. Acquisition of critical appraisal skills, keeping up with current literature, promotion of critical thinking, improvement of reading habits, strengthening of collegial relationships, development of professional identity, improvement of clinical practice, the ability to interpret data, the ability to understand the implications of research findings, familiarity with recent knowledge in the field, keep abreast of new knowledge, promote awareness of current research findings, stay familiar with the best current clinical research, encourage research utilization, improve patient outcomes, network and improved interpersonal relationships with other healthcare providers and specialists are some additional benefits of journal club for learners. Moreover, studies about the effectiveness of journal clubs in academia to promoting critical appraisal skills and practices are mostly found in the medical literature and, the benefits are likely to be similar in pharmacy students from the academia, industry or practice point of view.
Students collaborating in small group is a characteristic of problem-based learning (PBL) that is receiving increased consideration in the literature (Gelula 1977; Foley & Smilansky 1980; Webb 1991; Geerligs, 1995; Dolmans, Wolfhagen, & Vleuten, 2001; Hendry, Ryan & Harris, 2003; Parmelee & Michaelsen, 2010). Usually, a distinction is made between studies focusing on cognitive effects of group learning and studies focusing on motivational effects of group learning. Studies concentrating on the cognitive effects of small-group PBL seem to demonstrate that activation of prior knowledge, recall of information, causal reasoning or theory building, cognitive conflicts leading to conceptual change and collaborative learning construction take place in the tutorial group. Studies focusing on the motivational effects of PBL demonstrate that group discussion positively influences students’ intrinsic interest in the subject matter under discussion. The regular and effective journal club sessions conducted as a part of educational activities are considered to impact knowledge, skills, attitudes and practice and, ultimately, bringing overall quality and excellent outcomes in their understanding of the total course curriculum providing the opportunity to learn and practice facilitation skills. Several studies are reported providing suggestions on how to optimize group work in PBL (De Grave, Boshuizen & Schmidt, 1996; Moust et al, 2005; Dolmans & Schmidt, 2006; Kooloos, et al. 2011). Although the studies demonstrated that group learning in PBL might have positive effects, much more research is needed to obtain more evidence and deeper insight in the cognitive and emotional effects of small group learning in PBL (Dolmans & Schmidt, 2006; De Grave, Boshuizen & Schmidt, 1996). Comparing all the aspects, the effective and regular journal club sessions seem to provide benefits associated with different teaching-learning techniques including small group discussion, tutorial, group learning and problem based learning.

Pharmacy is one of the renowned and noble health care profession dealing with drug in all aspects. As a part of imparting quality and continuing education, it is the moral responsibility of pharmacy faculties involved in teaching and research, to prepare competent pharmacy professionals to meet and fulfill market needs. Therefore, it is a matter of great concern to think about effectively teaching the post graduate (PG) pharmacy students the recent topics in their course curriculum in order to understand the topics deeply and to improve their practical skills. Over the past decades, there have been many novel methods and innovations included globally for teaching and assessment of the pharmacy students. Several previous studies have documented the educational value of journal clubs, and few have used a comprehensive approach to measure the content and extent of student learning from journal clubs (Lee et al, 2005; Cave & Clandinin, 2007; Green & Johnson, 2007; Deendayalan et al. 2008; Alam & Jawaid, 2009; Steele-Moses, 2009; McLeod et al., 2010; Honey & Baker 2011; Patil 2013; Lachance 2014).

Though the journal club concept had been practiced since many decades in medical and nursing education, it has not been reported to be employed as an essential intervention for the routine class room studies as an educational strategy. Therefore, the objective of present study was to suggest a modified journal club concept with inclusion of small seminar sessions to be conducted by each individual student during routine class room schedules for the pharmacy post graduation pursuing students; with an aim to fulfill not only the needs of curricular based theory, practicals, projects and dissertation but also providing
excellent exposure and complete training to them during their regular course of study. The proposed CRSJC model suggests its implementation criteria based on assessment of its merits for routine class room teaching programs along with improving the subjective, practical, communicational, professional and problem solving skills of budding pharmacists.

Methods

In context of present studies, the research questions were made more explicit by including following particulars in the presentation (by student) and post presentation phase (by moderator/head).

Presentation Phase:

- The rationale for choosing the article for presentation - justification for choosing drug candidate/excipients/dosage form.
- Purpose for carrying out the research and clear mention of questions to be answered.
- Methods – Type of study (observational/experimental), in vitro and in vivo methods of evaluation, inclusion and exclusion criteria defined, sample size adequate, appropriate statistical tests used.
- Results and Discussion – Correlating the results with other studies by defending the findings, any confounding variables leading to bias, adequate follow up, mention of attrition rate of study subjects.
- Conclusion – Does the conclusion support the findings in the study?
- Summarize Strength – How is the information helpful in practice, does it provide any ideas for future research?
- Mention about weaknesses/limitations and unanswered questions should be made.
- Suggest objective and design of related work which can be performed during practical or theory classes.

Post-presentation Phase:

In-depth overall analyses - more discussion on points left by presentee

- Critiques and questions
- Comments about the article.

Study Protocol

Twenty four students of M. Pharm. (Pharmaceutics) course participated in the study with one moderator/head and two co-ordinators. Each participant was well equipped with computer and internet facility. Course content of each subject was divided into 24 topics and the topic allotment process was as per university enrollment numbers and order of appearance of each topic in the syllabi. The final presentation schedule was displayed on the notice board and time allotted for presentation was one hour following 15 minutes for
interaction session. Minimum one month preparation time was given in between the topic allotment and first presentation. During this time duration, moderator and coordinators of the study directed the students about preparation of presentation by providing brief background and introduction of each topic, as well as searching, compiling and presenting the collected materials and data in the most presentable and scientific way. The CRSJCs of students were arranged in the class rooms itself where OHP and LCD were used in addition to the black/white boards. The seating in the class room was re-arranged during the meetings to facilitate face to face talk and interaction. The assessment process involved some parameters such as quality of study materials collected, compilation of all sources of study materials, presentation and communication skills, and ability to satisfy the questionnaire from the audience. All the post graduate students as well as faculty members attended the presentation. The study continued for one year in which the same twenty four students entered in higher semesters.

**Conventional Classroom Teaching: Theory and Practical Classes**

During the study, the students were taught with conventional teaching method including chalk, blackboard, textbooks and power point presentation by subject teacher. For recent topics in the PG syllabi, teachers used to refer to more books and journals wherever necessary, delivered lecture on each of the topics. The students took important lecture notes during the lecture. After the completion of topic, the teachers provided list of books and other sources of literature they referred for the lecture; so that students could refer to those study materials. Teacher used to ask some question from the topic in between or after the lecture to assess the students about level of understanding of topic taught by the teacher.

Practical sessions are very important part in the routine teaching schedule in any pharmacy institute. During conventional teaching practice, the objective and methods of the routine experiment to be performed was given by the concerned faculty member during the practical class. After that, the students used to perform the practical as per given instruction and record the necessary data. The students were asked to complete the writing work in practical records which in turn was checked and signed by teacher. At that time, each student appeared for viva voce for assessing the level of understanding of student from the laboratory explanation by teacher and practical performed by them.

**Implementation of CRSJC Model**

To undertake the study, all the students were allotted seminar topics for preparation of theory classes and journal club topics for preparation of practical classes. In preparing the presentation schedule, the flow of the semester and students’ readings and assignments loads before and after this study was considered (Lee, 2004).

The syllabi of each subject were divided in to 24 topics for theory and practicals separately. Each student was allotted one-one topic from each subject. The seminar schedule was displayed at least before one month from the starting of the presentations. During this time period, students were guided properly about searching particular topic in library-
books, journals, periodicals, pharma magazines or other related literature. Students were also taught compiling all the material at one place, and preparing presentation. All the presentations were carried out as per given study protocol. Students were asked to note all the suggestions in written. The presentation was evaluated with standard questionnaire for theory seminars.

For the journal club presentations, protocol same as seminar was followed. But the students were allowed to present only research articles. For this, they were advised to access the latest research articles published in peer reviewed reputed journals and select some most relevant articles. However, students were asked to collect more than one relevant article to study but select any one for the presentation. After presentation of research article, student designed and rewritten one such experiment with necessary modifications in the article which was presented. Finally, the presentee faced standard questionnaire and interactive session.

**Data collection**

Data collection for the first and second semester M. Pharm. (Pharmaceutics) students was based on one theory topic and one practical/research topic previously allotted to each student from the syllabus. However, for the third and fourth semester students, the choice of article was mainly related to the research topic they undertook for the project/dissertation work. In both the cases, the preliminary strategy toward data collection mainly focused on articles from the peer reviewed journals. Data sources included literatures searched from institutional library, the National Library of Medicine’s online database and Google scholars. All articles were traced to their primary sources through available websites. The whole search strategy and data collection underwent interaction between student and moderator before the article being selected for the presentation.

**Assessment Criteria**

Assessment criteria were mainly divided into two: Qualitative and Quantitative approaches in assessment of presentation and standard questionnaire for theory seminar/practical journal club. The quantitative approach assessed the level of satisfaction and quality of journal club sessions across five domains: the quality of articles chosen, presentations, post presentation discussions, educational benefit and overall satisfaction of the journal clubs.

The presentee was evaluated and given different grade scores as A++ (9 points-outstanding), A+ (8 points-excellent), A (7 points-very good), B+++ (6 points-above average), B+ (5 points-average), B (4 points-below average), C (3 points-poor). The qualitative approach assessed based on participants concerns, comments and suggestions mainly utilized to analyze and identify areas for improvement in journal club design, content and overall value. After end of each session, an evaluation sheet was prepared by the teacher, based on answering the standard questionnaire by student during seminar (Table 1) and journal club (Table 2).
Table 1. Standard questionnaire for theory seminars.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Question/Parameter to be discussed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Which topic has been presented?</td>
</tr>
<tr>
<td>2.</td>
<td>Whether peer reviewed journals have been followed?</td>
</tr>
<tr>
<td>3.</td>
<td>Whether any new information is added to the presentation?</td>
</tr>
<tr>
<td>4.</td>
<td>Whether tables, figures, graphs, flow charts have been created for clear and effective explanation?</td>
</tr>
<tr>
<td>5.</td>
<td>Whether presentation slides and communication to audience was proper?</td>
</tr>
<tr>
<td>6.</td>
<td>Whether the standard format of references has been followed?</td>
</tr>
<tr>
<td>7.</td>
<td>Whether the practical significance/ industrial utility/future prospects of topic have been discussed?</td>
</tr>
<tr>
<td>8.</td>
<td>Whether the significance of topic from examination point of view have been discussed?</td>
</tr>
<tr>
<td>9.</td>
<td>Any question/comments/suggestions from audience?</td>
</tr>
<tr>
<td>10.</td>
<td>Whether the presentation has been completed in given time?</td>
</tr>
</tbody>
</table>

Table 2. Standard questionnaire for practical journal club.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Question/Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Whether rationale of research topic has been justified?</td>
</tr>
<tr>
<td>2.</td>
<td>Whether need and objective of the study have been discussed?</td>
</tr>
<tr>
<td>3.</td>
<td>Whether novelty of the work has been highlighted with reference to literature review?</td>
</tr>
<tr>
<td>4.</td>
<td>Whether rationale of selection of drug candidate has been justified?</td>
</tr>
<tr>
<td>5.</td>
<td>Whether selections of excipients/polymers/solvents have been justified?</td>
</tr>
<tr>
<td>6.</td>
<td>Whether method selected for preparation/characterization have been discussed?</td>
</tr>
<tr>
<td>7.</td>
<td>Whether results obtained have been discussed with proper discussion?</td>
</tr>
<tr>
<td>8.</td>
<td>Whether tables and figures have been properly cited within the text?</td>
</tr>
<tr>
<td>9.</td>
<td>Whether data obtained was supported by previous results/ literature?</td>
</tr>
<tr>
<td>10.</td>
<td>Whether references followed standard format?</td>
</tr>
<tr>
<td>11.</td>
<td>Whether the presentation slides had English spelling or grammar mistakes?</td>
</tr>
<tr>
<td>12.</td>
<td>Whether the presentation slides were properly arranged?</td>
</tr>
<tr>
<td>13.</td>
<td>Whether the practical designed to be performed in lab was well explained?</td>
</tr>
<tr>
<td>14.</td>
<td>Any question/comments/suggestions from audience?</td>
</tr>
<tr>
<td>15.</td>
<td>Whether the presentation has been completed in given time?</td>
</tr>
</tbody>
</table>

Comparison of conventional class room teaching and CRSJC model

To compare the conventional class room teaching with CRSJC model, the standard questionnaire and quantitative assessment approach using grade score was employed. At the end of class room teach and CRSJC model, the summary sheet of students’ response to the standard questionnaire was prepared. From the data obtained, analysis was carried out.
in terms of percentage of students’ response to standard questionnaire and correlated with their overall performance by grading system.

**Discussion**

During the conventional teaching, it was found that the students were not able to be thorough with many important aspects of the study materials in case of both theory and practicals. The students also faced problems to accommodate study material from more than one sources at single place. They were more dependent on lecture notes and had less work to do by themselves and hence they became passive participant of the teaching learning process. The major shortcomings observed after conventional class room teaching for theory are presented in Fig. 1.

During conventional class room teaching, it was also observed that the students were getting most of the things related to theory or practicals in readymade form. In such case, many students found performing the experiment as given method but at the same time it was also noticed that, during viva voce of particular experiment, they were not fully aware of concept, principle, scientific details of procedure given, role of each material used during the experiment; even though they had been explained these matter before starting the experiment. This resulted in inability to fully understand and explore the rationale of work. It was also noticed that the students were not very strong in interpreting the results they obtained keenly and were unable to draw concrete conclusion from the experiments. We realized that if this practice continues, students might be unable to design any new experiment from the syllabus/curricular topics and consequently their ability to correlate the theory and practical concepts to research level will be reduced, which ultimately affect the performance of student when they undertake any research topic for their minor or major research project as a part of fulfilling requirement to get pharmacy postgraduate degree. Format of experimental writing was also highly affected as they followed some undefined random method for completing their practical records (Fig. 2). This in turn affects students’ perception of their curricular experience and professional identity formation (Noble, O’Brien, Coombes, Shaw, Nissen, & Clavarino, 2014). The CRSJC model was proposed here based on the fact that the teaching method followed for undergraduate (UG) and post graduate pharmacy students should differ. This is because the functions and responsibilities associated with both courses are different. The UG course is basic pharmacy course where many pharmaceutical subjects are being taught whereas PG course is with specialization in subject where the student has to go for novel research project and dissertation. These require sound subjective knowledge, broad scientific vision as well as professional and communicational skills. The PG course is more of attitude developing where skills other than simple class room learning might be very fruitful.

On the other hand, from the evaluation viewpoint, it is important for a number of reasons to have a variety of assessments in a course and not rely on a single exam or project to determine student grades (Wolf, Dunlap, & Stevens, 2012). All forms of assessment have both strengths and weaknesses, but it is through the melding of various approaches that professors can draw on the virtues of one to offset the liabilities of another (Shulman,
Figure 1. The major shortcomings observed after conventional teaching in theory classes.

Figure 2. Major shortcomings found in students after conventional teaching in practical classes.

1988). Keeping in mind these points, when the same group of students was exposed to study criteria with implementing CRSJC model, potential benefits were noticed. It was observed that the students referred the latest trends in research of particular topic and accessed the best articles in library journals and web for searching the most relevant information about particular topic. The evaluation also suggested that all the students were able to design a particular new experiment and self-performed it in the laboratory satisfactorily.
The results of studies suggested that after conventional class room teaching, students were unable to reach to the level of understanding the subject which they were expected to be thorough with. This was evidenced by the final summary sheet prepared for students’ grade score against their response to standard questionnaire. It was found that 91.66, 79.16, 70.83, 58.33% students of I, II, III and IV semester respectively, showed poor performance after only class room teaching, whereas most of the students possessed A++ to A (outstanding to very good) grades after implementing CRSJC model (Table 3). Also, it was particularly found that students showed an extraordinary performance as they entered to consecutive higher semester. This happened due to the fact that these students were previously gone through the presentation experience and had better opportunity for improving as per any suggestions from the moderator; as compared to the first semester students who were first time exposed to this CRSJC format. Moreover, the feedbacks of participants for CRSJC were highly responsive as compared to conventional class room teaching using chalk and talk. This further confirmed that the CRSJC model was highly efficient and beyond comparison for M. Pharm. students.

Table 3. Comparative students’ grade scores after conventional class room teaching and CRSJC model.

<table>
<thead>
<tr>
<th>Grade scores/No. of students</th>
<th>After conventional class room teaching</th>
<th>After implementing CRSJC model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>A++</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>A+</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>A</td>
<td>0</td>
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</tr>
<tr>
<td>B++</td>
<td>0</td>
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</tr>
<tr>
<td>B+</td>
<td>01</td>
<td>03</td>
</tr>
<tr>
<td>B</td>
<td>01</td>
<td>02</td>
</tr>
<tr>
<td>C</td>
<td>22</td>
<td>19</td>
</tr>
</tbody>
</table>

*Twenty four students were evaluated in each semester.

CRSJC was able to upgrade the knowledge level of students and they were able to discuss points such as use of other excipients/materials, mechanisms involved in experiments, and other related details for experiment which they had designed and presented to be performed in the laboratory. This led them to think about novel alternate options/troubleshooting methods which in turn expanded the scientific vision of the students and they were also able to get different ideas for small and big research projects and their market trends. For each presentation, the students did much homework regarding rationale of the topic, selection of drugs and polymers, method selection, as well as which methods to be followed for evaluation/characterization of products. This helped a lot to understand the applications and future perspectives of particular topic. Moreover, during presentation schedules, the students went through many untouched aspects of learning which might not be possible through simple class room lectures. This is because in this model, the student is active participant and involved at each and every step of teaching learning process. The another major benefit of CRSJC is that the students faced interac-
tion sessions at end of each seminar, in which they appeared quite thorough with original concept/rationale, role of each component in the experiment, possible substitute; mechanisms, evaluation aspects etc. which enabled them to be more active, aware, competent and professional on contrary to conventional teaching where the students usually tried to read senior students records for some sort of help and seemed to be effortless. In CRSJC, each time, new experiment was performed and the students were well prepared with the details of experiments as they themselves have designed the experiment. This made the students more sincere, confident and self-dependent about their studies. In interaction session, it was further observed that searching, reading, learning, thinking, presentation and communication skills of students were greatly enhanced. However, when first time, CRSJC model was implemented, students had to work hard but when the same students presented their work as per the schedule, they showed excellent improvement in their presentation and they seemed to be quite confident regarding their presentation matter. The results of study suggested that in CRSJC, the students followed systematic format for recording the data of experiment; enabling to improve their scientific writing skills as per format. Development of above skills was not achieved with mere conventional classroom teaching. The possible reason behind this might be due to the passive role of the learners—that is students, as compared to that of their active role in CRSJC model in which they participated at each stage of their studies. In addition to excellence in subjective knowledge and skills, the CRSJC model enabled the students to excel in searching and compiling, referencing, record keeping and documentation, language and communication, presentation and scientific publishing skills which might not be obtained by mere classroom teaching. Moreover, another direct benefit seen of implementing CRSJC model was that students had to refer to latest study materials for which good review and research articles really helped which led to enhanced and global learning of study materials and therefore students were able to cover single topic in much depth. But at the same time they also had to prepare the material concisely during presentation in CRSJC. This improved skills about presenting the topic briefly, although the knowledge about topic was much more as he/she learnt and prepared the topic deeply. Since the topic had been presented individually in front of many professional personnel, the students were found aware and sincere about all aspects of presentation; consequently actively engaging students in meaningful and authentic activity (Carr, 2014). Steinbronn & Merideth (2008) suggested making learning outcomes meaningful in the teaching environment by engaging students actively in their own learning through student-to-student, student-to-teacher, and student-to-content to build collaborative skills. The development of these skills involves a commitment from students to share personal experiences, ideas, and alternatives (Merideth, 2007). Students must be engaged in authentic learning tasks which support learners in their development of skills in self-regulation and self-learning (Herrington, Oliver, & Reeves, 2002). These facts definitely help to increase the confidence level of student as well as enhance their communication skills.

It has been observed that learning styles of pharmacist have positive and specific impact on career decisions, practice patterns and teaching method preferences (Austin, 2004). In brief, after PG, the students are expected to be well prepared to choose and enter career option of their choices. In this context, CRSJC seems to be an overall teaching cum training tool and benefits the students in a lot of ways during pursuing their master degree.
Finally, it was observed that CRSJC made the students to design project as per need, to go for problem based learning and find out the solutions to meet market competency. In this way, it helped to develop skills and attitude in the student to acquire positions in pharmaceutical industry dealing with F&D, R&D, DRA as well as primary pedagogical training to opt academic positions for UG teaching.

The comparison of major benefits obtained from CRSJC model with conventional teaching method is summarized in Table 4.

Table 4. Comparison of class room teaching and CRSJC model.

<table>
<thead>
<tr>
<th>Class room teaching</th>
<th>CRSJC model</th>
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<tbody>
<tr>
<td>Conventional method</td>
<td>Contemporary tool</td>
</tr>
<tr>
<td>Teacher-faculty centered</td>
<td>Learner-student centered</td>
</tr>
<tr>
<td>Unidirectional as controlled by teacher only</td>
<td>Interactive as teachers, students, professional colleagues are involved</td>
</tr>
<tr>
<td>Teaching and learning becomes routine prototype process</td>
<td>Teaching learning process becomes interesting with novel ideas from different professionals</td>
</tr>
<tr>
<td>Focus on memorization of topic</td>
<td>Focus on understanding and clarity of concept</td>
</tr>
<tr>
<td>More emphasis on writing skills, neglecting oral communication and presentation skills</td>
<td>Development of writing skills along with attaining excellent oral communication and presentation skills</td>
</tr>
<tr>
<td>Teachers get poor or no feedback from students</td>
<td>Teachers get actual and continuous feedback from students</td>
</tr>
<tr>
<td>Students are passive recipients</td>
<td>Students are active participants</td>
</tr>
</tbody>
</table>

Conclusion

Implementation of class room seminar and journal club (CRSJC) model with accessing review and research articles published in journals and periodicals for teaching post graduate pharmacy students during their routine class room programs appeared to be an extremely fruitful tool in teaching-learning process. At the same times, it may require development of own assessment criteria for critical and competent evaluation parameters. CRSJC model in educational setting clearly facilitated a huge increase in students’ awareness offering the opportunity to consider the applications of published articles to current pharmacy syllabi. The CRSJC model also exhibited an unanticipated and extremely valuable outcome in this setting in form of opportunity to become familiar with the technical and specialized language in academic, product (industrial), or patient (clinical) oriented pharmacy practices. Thus, CRSJC functioned and contributed toward developing professional attitude and seemed to be the first step toward bridging the gap between pharmacy education, research and practice. Keeping in view overall benefits of this model, it is highly recommended to be implemented in post-graduation pharmacy classroom programs to support and uplift knowledge based teaching learning process and to
promote continuing education which may additionally act as short term training programs for almost all types of job perspective and career options associated with pharmacy and allied professions. However, with CRSJC model, the future studies are suggested to be conducted using big sample size, different post-graduation disciplines at various pharmacy institutes as well as statistical validation of the study results.

References


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