Effect of case–based video support on cyberbullying awareness

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Cyberbullying is among the major trends regarding safe and ethical information technology use. Prevention suggestions tend to rely on implications of descriptive and correlational studies rather than true experimental works. In this regard, the current study investigated the effect of case–based video (CBV) support on empowering cyberbullying awareness among 120 pre–service information technology teachers. Solomon four–group design was used in which four groups of students were randomly assigned to two treatment conditions. In the experimental groups, CBVs on authentic victimization instances were integrated into the instructional module on cyberbullying. The same cases and the content were provided without the CBV support in the control groups. One group from each condition was pretested before the implementation. Following the treatment, all groups were post–tested through a one–factor cyberbullying awareness scale. Two–way ANOVAs were used to analyze the data. Findings revealed that both types of instructional modules were useful whereas the CBVs led to better outcomes. Findings were discussed with regard to the relevant literature and suggestions for further studies were provided.

Keywords: Cyberbullying; case–based learning; media in education; value education; video

Introduction

Provision of the same instruction to all learners is regarded as ineffective. This encourages scholars to generate instructional alternatives that comply with individual learning needs. Among these alternatives, the use of videos to transfer ideas and knowledge has been a fruitful area for decades (Wenger, 1943). Recently, there have been several studies which address the instructional advantages of videos in different fields such as distance education (Borup, West & Graham, 2012; Donkor, 2011), special education (Ayres & Cihak, 2010; Shukla–Mehta, Miller & Callahan, 2010), corporate sector (Pang, 2009), computer assisted language learning (Erçetin, 2010) and pre–service teacher education (Tan, 2006). Instructional video support was found useful in these studies.

The role of instructional videos to change attitudes has been an interesting track of study. Even though the contemporary literature tends to highlight the bad effects of videos on corrupt attitudes (Kistler & Lee, 2009; Zhang, Miller & Harrison, 2008), positive examples

of attitude change through video support have been reported in terms of drug prevention (Okamoto, Helm, McClain & Dinson, 2012) and health education (Poureslami, Murphy, Rootman, Nicol & Balka, 2007; Wang, Liang, Schwartz, Lee, Kreling & Mandelblatt, 2008).

Videos were used in teacher education to develop awareness as well. As they provide interaction opportunities with different characters and situations; this advantage has been used to promote pre–service teachers' philosophical reflections (Tan, 2006) and to change their attitudes and perceived self–efficacy levels (Kaşkaya, Ünlü, Akar & Özturan–Sağırlı, 2011). Tan (2006) studied with 25 pre–service teachers in Singapore to see the positive influence of popular films on preparing students for the teaching profession. Based on the literature, student reflections were classified under several categories such as the modification of personal aims, beliefs, assumptions and actions; confronting and solving obstacles; and reviewing and changing personal instructional goals. Findings revealed that student reflections regarding these categories were promoted through videos. Similarly, Kaşkaya et al. (2011) investigated the influence of movies on pre–service teachers' perceived self–efficacy and attitudes toward teaching. Both qualitative and quantitative methodologies were employed which resorted to responses of 102 pre–service teachers. After six weeks of implementation and class discussions; it was observed that students' attitudes toward teaching and their perceived self–efficacy have changed in a positive direction.

Focusing on instructional video interventions can be regarded as an instance of traditional media comparison studies. The current study resorted to case–based videos (CBVs) for awareness raising. Case–based learning (CBL) is an established instructional method, which was found useful in technology–enhanced settings (Demetriadis, Papadopoulos, Stamelos & Fischer, 2008). CBL needs to involve an authentic story with an interesting plot that relates to learners' experiences (Herreid, 2007). It should be relevant to the learner and the topic, arouse interest, create empathy with central characters, provoke conflicts, force decisions, and has generality. These characteristics enrich the pedagogic utility of the cases. In the current study, cases were delivered through videos that were selected and modified by field experts according to current instructional purposes. The particular aim was to implement CBVs on cyberbullying to develop awareness among pre–service teachers.

Cyberbullying is relatively a new phenomenon, which refers to deliberate and repeated harassment that is directed at individuals through information and communication technologies (Beran & Li, 2005; Patchin & Hinduja, 2006, 2010). Novel interaction opportunities offered by emerging technologies, immersion in online social networks, the taste of anonymity in online settings and the rich variety of novel perpetration tools have made cyberbullying a common problem (Akbulut, Sahin & Eristi, 2010). The behavior is accompanied with negative psychological consequences such as anger and sadness (Beran & Li, 2005), hostility and psychoticism (Arıcak, 2009), emotional instability (Çelik, Atak & Erguzen, 2012), and emotional distress (Juvonen & Gross, 2008). In this regard, cyberbullying is a contemporary and serious problem which is likely to disrupt and affect

all aspects of individuals' lives (Feinberg & Robey, 2008). Furthermore, recent work revealed that cyberbullying is a common problem even among prospective teachers who confessed their bullying acts, but did not know the consequences of their behaviors (Akbulut & Cuhadar, 2011).

The need for the current study can be justified through several premises. First of all, there is a need for further research on the instructional effects of CBVs so that relevant research–based suggestions are integrated into the curricula more effectively (Kaşkaya et al., 2011). Second, there are very few studies on value education toward cyberbullying, and none have considered the potential of CBVs to raise awareness. One of the awareness development activities toward cyberbullying was conducted with 55 pre–service information technology teachers who were offered a short lecture on cyberbullying. Qualitative analyses revealed that the lecture influenced student reflections on cyberbullying experiences, and the majority of the participants reported that they felt responsible to prevent further cyberbullying instances in their personal environments (Akbulut & Cuhadar, 2011). The third premise is the fact that teachers' perceptions on cyberbullying have rarely been studied (Huang & Chou, 2013), even though they have critical roles to equip the next generations with relevant coping skills. Finally, instructional technology studies seem to lag behind contemporary educational psychology topics in several leading journals (Nolen, 2009). That is, a serious decline in the quantity of experimental studies has been observed (Ross, Morrison & Lowther, 2010). To address these gaps, the current study employed a relatively robust experimental methodology to examine the effect of CBV support on cyberbullying awareness among pre–service teachers. In the next section, the methods and procedures of the experimental design were summarized followed by the discussion of findings and possible directions for further studies.

Methods and Procedures

Research Design

A robust form of one–treatment condition experimental designs was proposed by Solomon, which was referred to as the Solomon four–group design (Solomon, 1949). Like other one–treatment condition experimental designs (i.e., pre– & posttest control group and posttest only control group), Solomon can assess the influence of the treatment effectively. It is also regarded as immune from most threats to internal validity. It further has the advantage of being the only one–treatment condition experimental design which can detect pretest sensitization (Braver & Braver, 1988). According to Campbell and Stanley (1963), the design 'deservedly has higher prestige and represents the first explicit consideration of external validity factors (p.24)', that is, the generalizability of the findings is increased. Subjects are put into two experimental and two control conditions randomly, where one group from each condition is pretested. After the implementation of the treatment, all groups are post–tested. The nature of the design is summarized in Table 1. In the current experiment, intact groups rather than individuals were randomly assigned to treatment conditions. Thus, the current form was not the best version of the Solomon four–group design.

Table 1. Summary of the experimental design

Group	Pretest	Intervention	Posttest
1	Yes	Control	Yes
2	No	Control	Yes
3	Yes	Experiment	Yes
4	No	Experiment	Yes

Subjects

The study was completed with 120 undergraduate students (77 males & 43 females) in an IT teacher training department in Turkey. Four intact groups with a total of 134 students were randomly assigned to the experimental conditions. A group from each condition was randomly selected and administered a pretest. Since intact groups were randomly assigned to conditions, a completely true experimental design could not be realized.

Despite the encouragement through extra credits, subject loss occurred in the experiment. That is, out of 134 students in four groups, 120 subjects (89.55 %) received the treatments and provided data on the dependent variable. Each group had sufficient number of subjects to sustain acceptable normal distribution standards: Pretested control group (n=30), pretested CBV group (n=32), un–pretested control group (n=28), and un–pretested CBV group (n=30).

The mean age of the subjects was 21.51 (SD: 1.15). They can be considered advanced computer and Internet users particularly because of their current department. They all possessed a variety of IT skills including software development and web design. Their daily Internet use ranged between one to eight hours ($\bar{x}$=4.17; SD=1.94), and the majority were active social network users (n=108; 90 %).

Treatment

Experimental and control groups received the same instructional content and responded to similar discussion questions in a standard class time. The only difference between the groups was the integration of three CBVs in the experimental groups. The videos were determined by two field experts through resorting to several documentaries, informative videos, television spots and movies addressing cyberbullying. Their instructional concordance with the target age group was assessed by the experts as well. Selected videos lasted three to seven minutes and illustrated the reasons and dangers of cyberbullying through authentic cases. The scripts of foreign videos were translated and subtitles were embedded where necessary.

The same amount of time was allotted to the control groups, which were exposed to the same content and cases without the CBV integration. The cyberbullying stories depicted in the videos were expressed through scientific support from the recent literature, further examples were provided, reasons and dangers of cyberbullying were discussed through the help of comics, graphs and tables whenever applicable. An independent scholar of

instructional design reviewed the CBVs and the instructional content provided to the control groups, and confirmed that the content provided in each condition was equivalent.

Dependent Variable

In the current study, participants were asked to rate the appropriateness of 28 cyberbullying instances which were proposed in a contemporary scale (Akbulut et al., 2010). The original measure involved cyberbullying behaviors such as flaming, harassment, cyberstalking, denigration, masquerade, exclusion, outing and trickery (Willard, 2005). The form was administered in several studies successfully, revealed more than 50 percent of the total variance with a single–factor solution, and had high internal consistency coefficients (i.e., 0.96 or higher).

During the adaptation of the scale, two experts on value education, an expert on cyberbullying and a scholar of guidance and counseling reviewed the items and instructions. Subjects were asked to rate the cyberbullying instances on a 5–item scale ranging from not appropriate at all (i.e., 1) to very appropriate (i.e., 5). Therefore, higher means indicated higher tolerance towards cyberbullying. The scale revealed ideal internal consistency coefficients in the current study, which ranged from 0.83 through 0.91 in different groups. Factor analyses confirmed the unidimensional nature of the scale. Thus, the mean of all items in the scale was used as the dependent variable of the current study.

Data Collection and Analysis

Two weeks before the classes, one group from each condition was pretested through the attitude scale. Immediately after the content was provided, all groups were given the same attitude scale again. Participation in the study was awarded with extra credits. Since a delayed test was not administered, long–term impact of the current treatments could not be explored.

Statistical treatment of the Solomon four–group design is a complex process. Possible scenarios and the complete details for the statistical analysis have been presented through a useful flowchart by Braver and Braver (1988, p.152). Based on that flowchart, a 2 X 2 between–groups ANOVA was conducted on the posttest scores of all groups. Based on the nature of the interaction effect, the main effect of the treatment was interpreted.

In addition to the algorithm proposed by Braver and Braver (1988), which was helpful to examine the post–test scores and potential influence of pretest sensitization, a 2 X 2 mixed–design ANOVA was conducted with pre– and posttest scores of the pretested groups. This procedure was quite useful as it revealed whether both conditions created a change in the dependent variable across different times. Finally, pretest scores were also compared through an independent–samples t test to retain the assumption that the groups were similar at the inception.

Results

Descriptive statistics pertaining to the attitude scale are provided in Table 2. Relevant parametric tests were conducted to see whether observed means were different from each other.

Table 2. Descriptive statistics of the attitudes toward cyberbullying*

Treatment	n	Pretest		Posttest	
		Mean	SD	Mean	SD
Control	30	1.808	0.463	1.598	0.459
Control	28	–		1.635	0.497
CBV	32	1.823	0.544	1.431	0.361
CBV	30	–		1.464	0.309

* CBV: Case–based video. Note that higher means refer to higher tolerance toward cyberbullying

First of all, to see whether the posttest averages on the cyberbullying attitude scale differed among four groups, a 2 (pretested vs. un–pretested) X 2 (CBV vs. control) between–groups ANOVA was conducted as Braver and Braver (1988) suggested. The ANOVA is summarized in Table 3, which introduced three findings: (a) The main effect for testing, which compared the averages of the pretested and un–pretested groups, (b) the main effect for treatment, which compared the averages of the control and video groups, and (c) the interaction effect of the two factors (i.e., testing vs. treatment), which investigated whether one of the main effects differed according to the levels of the other factor. The only significant test value belonged to the main effect for treatment ($p<0.027$), which revealed that the average of the CBV groups (1.447; SD=0.335) was significantly lower than the average of the control groups (1.616; SD=0.474). In other words, the CBV groups demonstrated lower tolerance towards cyberbullying than the control groups even though the partial eta squared value of 0.042 represented a small effect size (Huck, 2012). That is, practical significance of this finding should be tested with further research. On the other hand, the difference between the pretested and un–pretested groups was not significant ($p<0.636$). Therefore, test sensitization was not regarded as a threat to the internal validity of the current experiment. Finally, the significant difference between the CBV and the control groups was consistent across pretested and un–pretested subjects which was shown by the non–significant interaction effect ($p<0.98$).

Table 3. 2 X 2 between–groups ANOVA for the posttests (n=120)

Source	Type III SS	df	MS	F	p	η_p^2
Corrected Model	0.893	3	0.298	1.762	0.159	0.044
Intercept	280.981	1	280.981	1663.005	0.001	0.935
(a) Testing (Pretested vs. un-pretested)	0.038	1	0.038	0.226	0.636	0.002
(b) Treatment (CBV vs. control)	0.855	1	0.855	5.061	**0.027***	0.042
(c) Testing * Treatment	0.000	1	0.000	0.001	0.98	0.000
Error	19.599	116	0.169			
Total	300.848	120				
Corrected Total	20.492	119				

To check whether the pretest scores of the pretested groups were similar, an independent–samples t–test was conducted. The t value of 0.113 with a corresponding significance of 0.911 indicated that the pretest scores were similar at the inception. Finally to see whether both instructional interventions influenced the tolerance toward cyberbullying, a 2 (pre– vs. posttest) X 2 (CBV vs. control) mixed–design ANOVA was conducted. The ANOVA summary is provided in Table 4.

Table 4. 2 X 2 mixed design ANOVA for the pretested groups (n=62)

Source	Type III SS	df	MS	F	p<	η_p^2
Time (Pre vs. Post)	2.81	1	2.81	28.334	0.001	0.321
Time * Treatment	0.255	1	0.255	2.575	0.114	0.041
Error (Time)	5.95	60	0.099			
Treatment (CBV vs. control)	0.18	1	0.18	0.552	0.461	0.009
Error (Treatment)	19.606	60	0.327			

Similar to the two–factor ANOVA summarized before, this ANOVA introduced three findings: The main effect for time, the main effect for treatment, and the interaction effect of time by treatment. The observed F value for the time revealed that the pretest means of the pretested groups (1.816; SD=0.502) decreased significantly after the implementation (1.511; SD=0.417) at a probability level below 0.001 with a large effect size. This finding was consistent across the treatment groups because the interaction effect was not statistically significant. The main effect for the treatment was not significant in this analysis probably because 62 participants were not enough to sustain adequate statistical power. More specifically, as the researchers should aim to achieve a statistical power of 0.80 or above (Cohen, 1988; Field, 2009), the observed power of 0.113 in the current analysis was not sufficient.

Discussion and Conclusion

Findings of the current study should be evaluated with caution because the use of intact groups may have interfered with the internal validity of the experiment. In addition, a delayed observation to explore long–term impact was not realized. Still, analyses on immediate post–tests revealed that both types of instructional modules were useful for awareness development while the CBV modules were significantly better than the conventional ones. This difference supported the findings of previous studies, which suggested a positive attitude change through videos in health education (Kaşkaya et al., 2011; Poureslami et al., 2007; Tan, 2006; Wang et al., 2008).

The small effect size observed in the main effect of CBV should be considered with caution while interpreting the practical significance of the study. The characteristics of participants, measures and topics in different instructional contexts may probably lead to controversial

findings. Thus, the practical implications favoring CBVs should be suggestive rather than definitive. On the other hand, if the current short CBV intervention was effective, more meticulous and longitudinal designs toward awareness development can create better results towards safe and ethical cyberspace use.

Further studies with delayed observations, random selection of subjects and higher effect size indices can change the current picture. On the other hand, the parametric test indicating a similarity between the pretested groups at the beginning, and the non–significant post–test difference between the pretested and un–pretested groups complements the internal validity of the experiment. In addition, the large effect size for the difference between the pre– and post–implementation averages of the pretested groups supports the usefulness of both awareness development interventions. Policy makers may consider such instructional interventions before proposing strict infrastructure precautions such as content filtering and suspending access, which could be exploited as the violation of freedom in some cultures.

The target population of the study was limited to pre–service information technology teachers who have critical roles in equipping future generations with relevant IT skills. Since any pre–service teacher should be aware of ethical technology use, extending the current design across different teacher education fields may lead to better implications. Furthermore, the implementation was performed in a short span of time which cannot give clear ideas regarding longitudinal outcomes. Thus, the duration and nature of the current intervention can be extended to seek for more permanent implications.

Higher levels of awareness reflected in self–report measures may not always result in relevant ‘action’. In this regard, both the methods and measurements need to be enriched through the help of moral development scholars so that actual performance outcomes may be explored. Higher awareness scores regarding cyberbullying may not always mean ‘the proper action’ either. That is, awareness development activities may sometimes help potential perpetrators to learn new ways of cyberbullying. Therefore, a thorough planning and implementation of the value education activities are needed to sustain the desired outcomes. For instance, introducing ethical dilemmas and focusing on empathy training can be a good start.

The current study may be considered contributive to the literature with its focus on awareness development through CBVs among pre–service teachers. In addition, the Solomon four–group design is a rarely used methodology in the literature. Nonetheless, the quality of the intervention can sometimes be more critical than the type of intervention in successful resolution of cyberbullying (Fenaughty & Harré, 2013). Thus, alternative and more effective ways of integrating the current conditions into instructional settings can be proposed through the help of further design–based and action research studies. Still, development of an influential CBV can be a lot easier than preparing a complete instructional design module. In this regard, the importance of instructional CBVs in awareness raising and value education should not be underestimated.

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