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The Effect Over Time of a Video-Based Reflection System on Preservice Teachers' Oral Presentations

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Abstract: We report the development of preservice teachers' oral presentation performance based on a technology-mediated video reflection system. Participants video-recorded oral presentations and uploaded them to an online blog to view and reflect on their performance and that of their peers. Four presentations by forty-one participants were analysed using a range of criteria based on what we call the Modes of Communication (voice, body-language, words and alignment between them) and the Constructed Impression of the communication acts (confidence, clarity, engagement and appropriateness). Results indicate a significant improvement across all criteria with a decreased rate of improvement for later iterations.

The recent Australian Institute for Teaching and School Leadership (AITSL) document, the Professional Standards for Teachers, specifies that graduate teachers should possess "a range of verbal and non-verbal communication strategies to support student engagement" (see Focus Area 3.5 of the National Professional Standards for Teachers, AITSL, 2011). One aspect of communication competence for teaching is oral presentation performance such as classroom instruction and explaining a topic as opposed to written communication, parent communication, or personal communication with students. This study set out to investigate the development of preservice teachers' oral presentation capabilities by examining the impact of a series of video-based reflection activities over time.

Improving Communication Competence for Teaching

Teacher effectiveness is intrinsically linked to their communication competence (Worley, Titsworth, Worley, & Cornett-DeVito, 2007). Principals and accreditation authorities consider communication competence when evaluating teachers and developing preservice teachers' communication competence can help them deal more effectively with student diversity (Simonds, Lippert, Hunt, Angell, & Moore, 2008). Effective communication has also been linked to improved student learning outcomes such as positive attitudes, higher levels of motivation, achievement, and perceptions of control (Chesebro & McCroskey, 2001).

Examining how to enhance the communication performance of preservice teachers has been identified as an important pursuit (Özmen, 2010). Preservice teachers often lack the insight necessary to analyse their communication acts more deeply (Hunt, Simonds, &

Cooper, 2002) because they are often more concerned with noticing their own communication acts than considering their impact on students. Self-reflection is crucial in assisting preservice teachers to become more sensitive to their communication actions; in doing so novices learn to interpret and critically analyse their performance and consider how it might be improved (Sherin, 2004). Such explicit noticing is crucial in changing practice because unless teachers notice they are unable to make choices about acting differently (Mason, 2002). Reflective tasks thus afford preservice teachers opportunities to evaluate their performance in a variety of settings, including simulations of realistic teacher activities (McCaleb, 1984).

One approach to developing insight into communication actions is through the use of video. A study of 26 science teachers who viewed video of themselves and their colleagues to improve their practice identified that watching the video enabled teachers to engage in critical reflection (Zhang, Ludenberg, Koehler & Eberhardt, 2011). As they observed themselves 'from a distance', teachers could analyse their performance from different perspectives, such as that of the students, and identify aspects of their practice that might normally go unnoticed. Also, video afforded closer inspection of the performance of colleagues; teachers could discover new approaches or strategies, and more objectively compare their own teaching to others. Video recordings can also be viewed multiple times, which "affords the luxury of time" (Sherin, 2004, p.13) so that precise observations and fine-grained analysis of practice are possible. Video therefore allows for more detailed analysis and commentary on performance (Borko, 2004).

A range of online video based approaches have been used to develop teachers' presentation capabilities. For instance Miyata (2002) developed an online system that enables students to upload videos of their practical teaching at regular intervals in order to track and reflect upon their progress over time. Yamashita and Nakajima (2010) have trialled an ICT-based system that allows classes of students to post real-time assessment of their peers' presentations using student response technology as well as more reflective feedback on discussion boards. However, neither of these studies consider technology-mediated video reflection over time so they do not demonstrate how multiple opportunities to practise and review presentations might impact teachers' presentation performance.

Video is also being increasingly used with preservice teachers (Wang & Hartley, 2003) because it has the potential to focus attention on particular features of practice (Star & Strickland, 2008). However, previous video-based studies of communication performance have not examined a broad range of competencies, nor have they considered how the components of presentation performance develop over time as a result of successive iterations.

The present study seeks to address these gaps in the literature and the limitations in previous research by examining how a process of online video-reflection enabled preservice teachers to develop various components of their presentation performance over time. Students recorded videos of their presentations and iteratively reflected on their attempts throughout an academic year. Previously (Author, 2011), we discussed how this process of viewing and reflecting on presentations improved the preservice teachers' understanding of communication concepts and their communication competence. The analysis presented in this paper examines how communication performance and its various components developed over time.

Features of Communication Competence for Teaching

A teacher's repertoire of communicative competence includes a range of elements,

such as listening, presentation skills, voice projection, body-language and gesture. Effective teaching is dependent upon appropriate nonverbal communication (McCroskey, Richmond, & McCroskey, 2006) since what teachers "do nonverbally constitutes a continuous stream of messages which impact on the meanings which are stimulated in students' minds" (McCroskey, Valencic, & Richmond, 2004, p. 199). Body-language and gesture have been the focus of research studies, in particular, in their role in the teaching of Mathematics and Languages (Alibali & Nathan 2007; Lazaraton, 2004). An analysis of speech and body-language in an English as a second language classroom found that gestures and other forms of nonverbal behaviour enhance classroom-based second language acquisition (Lazaraton, 2004). Richland (2008) questions whether gestures are tied to the speaker's knowledge of the representations and relations they describe, or to pedagogical and /or cultural norms of communication. Whether or not these are attributable to cultural or pedagogical derived gesture routines, it has been suggested that they are under teacher control, and therefore can be developed to improve teacher communication effectiveness (Richland, 2008).

Visual cues such as body-language can play a dominant role in conveying emotional meaning (Goodboy & Myers, 2008), though auditory cues can dominate for specific emotions. However, both vocal and visual cues have been shown to contribute to the credibility of the communicator (Goodboy, Martin, & Bolkan, 2009). Vocal qualities or *vocalics* such as the rate at which a teacher speaks, variability in tone and pitch, volume, are also important characteristics of classroom communication. Vocalics enhance teacher clarity (McCroskey, et al., 2006) and influence student perceptions of their teachers (Hinkle, 2001), which may explain why vocalics have been linked to students' preferences for one teacher over another (Frisby & Martin, 2010). Effective teachers also use a greater variety of patterns of speech (Oliviera, 2010).

The alignment between different communicative modes can influence the way communication acts are perceived. Vocalics can provide cues to listeners that may enhance, diminish, or even conflict with other verbal and nonverbal messages. However, when verbal and nonverbal cues are incongruent, individuals often accord greater credence to nonverbal over verbal cues (Burgoon, Birk, & Pfau, 1990).

Teachers' communicative behaviours are crucial in fostering positive teacher-student relationships and hence in student learning (Campbell, Kyriakides, Muijs, & Robinson, 2004). Students prefer teachers who appear confident and self-assured rather than quiet and apprehensive. Confident teachers are more willing to communicate and have a greater impact on student engagement and learning (McCroskey, Richmond, & McCroskey, 2002).

Clarity is the extent to which a teacher can effectively communicate information and ideas for students through the use of appropriate verbal and nonverbal actions (Comadena, Hunt, & Simonds, 2007). Clear teachers speak fluently, remain on message, and can explain information in an effective manner (Chesebro & McCroskey, 2001). Teacher clarity has also been associated with student achievement and positive student-teacher relationships (Goodboy & Myers, 2008). Teachers who use appropriate eye contact, gesturing and moving around the classroom, smiling, voice modulation, and humour have been found to be highly effective in engaging students (Hsu, 2010). Previously, such behaviours were described as "teacher enthusiasm" or "teacher expressiveness" (Abrami, Leventhal, & Perry, 1982) or as "immediacy behaviours" (McCroskey & Richmond, 1992). Teacher immediacy is an important aspect of teaching which has been associated with positive student attitudes towards their teachers and their studies, increased levels of student motivation (Allen, Witt, & Wheeless, 2006), participation (Rocca, 2008) and academic achievement (Comadena, Hunt, & Simonds, 2007).

Appropriateness, which can be defined as adherence to social rules or norms, has also been positively associated with communication competence. McCroskey, Valencic and

Richmond (2004) note the direct relationship between teacher communication competence and student learning. First, teachers' verbal and nonverbal behaviours are observable by students. Then, the students' interpretation of teachers' patterns of communication is linked to their perceptions of the credibility of the teacher. Finally, these perceptions are associated with students' evaluation of the teacher and of their own learning.

The Purpose of the Study

Frisby and Martin (2010) report that it is "necessary to pay particular attention to instructional communication training for instructors" (p. 158). The present study investigates a group of preservice teachers as they used a video reflection system designed to improve their communication performance. The research focuses on answering the question, "Does iterative use of video reflection improve preservice teachers' communication performance over time?"

Method

The participants in this research were secondary preservice teachers enrolled in a Diploma of Education program. As part of their methodology unit in Mathematics, Languages, or Information and Communication Technologies (ICT), the preservice teachers were required to record four presentations. There were 61 preservice teachers across the three teaching areas, and 41 students completed all four presentation tasks. Of these 41 students, there were 26 females and 15 males whose ages were distributed between 20 and 50 years.

The four presentations were fairly evenly spaced throughout the 2010 academic year. During that time, the participants completed 50 days of professional experience in a school, mostly on one day per week but also including a ten day block which typically took place in the middle of the year, after the second presentation. The topics were: (i) 'Introducing my teaching subject to students in the first class of the school year'; (ii) 'Presenting my teaching subject at a parent-teacher evening'; (iii) 'Addressing a school assembly' (e.g., to explain the school policy for accessing new computer laboratories); and (iv) 'Farewell talk to students on the last day of classes for the year'. The preservice teachers were given the topics one week in advance. They were advised that the main emphasis of the activity was on their presentation skills rather than the subject matter of their talks. They were also told that the tasks would not count towards their university assessment in order to reduce any apprehension. Even though the presentations were not formally assessed, it was clear from the quality of the video presentations that the participants took the task seriously.

The pedagogical model which underpins the video reflection system is based on four iterative stages (Bower, Cavanagh, Moloney, & Diao, 2011): making a presentation (so pre-service teachers can practise and improve their communication skills), personal reflection (to identify communication strengths and focus areas for improvement), peer reflection (to provide feedback by comparing and contrasting performance), and refinement (to improve performance through analysis of peer feedback and self-reflection). Each stage in the video reflection process was supported by technology as outlined in Figure 1.

The pedagogical model for the video reflection system is framed around the three communication domains outlined by Morreale et al. (1993): namely, the cognitive domain, the behavioural domain and the affective domain. The cognitive domain includes knowledge and understanding of the communication process and the various elements which are part of any communication act. Viewing their own and their peers' presentations provides

opportunities for preservice teachers to develop their cognitive understanding of communication. The behavioural domain essentially refers to the communication skills of the communicator. Performing the presentation allows pre-service teachers to practise and develop their behavioural communication competence. The affective domain incorporates the communicator's feelings, attitudes, and motivation to communicate. Writing reflective commentary on the presentations enables pre-service teachers to express their attitudes to the performance while peer feedback can be used to improve behavioural performance in future presentations.

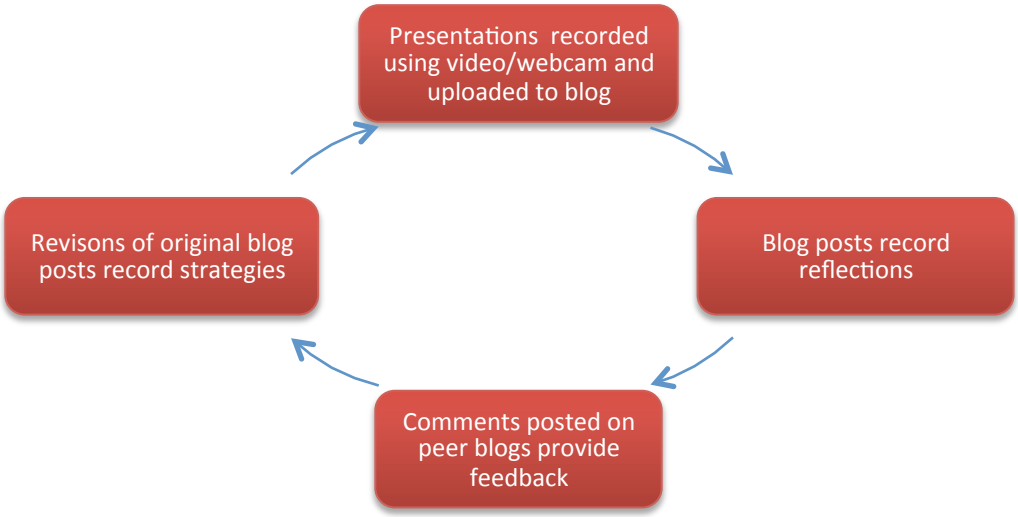

Figure 1: Technology use to support the phases of the video reflection cycle

Using the video reflection system we devised, the preservice teachers recorded their presentations in pairs using the web-cam and the Photo Booth application available from a class set of MacBook Pro laptops. They then uploaded the recordings to a university blogging tool from where they were able to review their presentations and write reflective comments about them. They could also view presentations made by fellow students and post reflective comments on these as well. Typically, the presentations ran for between one and three minutes. We explained to the participants how to create and upload their videos, and post their reflective comments. Apart from these instructions, they received no other preparation for the presentations. They did not have access to the criteria we used to evaluate their presentations because we wanted to investigate which aspects of the presentations the participants would emphasise in their personal reflections and peer reviews.

One of the crucial elements of the video reflection system was how it afforded preservice teachers the opportunity to view and reflect on their own presentations, and those of their peers. The review-reflection phase occurred as participants wrote reflective blog posts after they viewed the videos of the presentations. The opportunity for multiple viewings of the videos allowed preservice teachers to reflect on their performance and provide comments on the presentations made by their peers. The ability to access comments from fellow students about their presentations provided a means by which preservice teachers could evaluate their communication strengths and weaknesses and consider new strategies for enhancing their future presentations. We intended that the process of writing and thinking about the reflective blog posts would further enhance the participants' presentation competence and lead to improved performance over time. For a more detailed description of the video reflection system and analysis of the nature of the students' reflections, see Bower et al. (2011).

Assessment Method

Five assessors from Macquarie University evaluated the communication competence of the preservice teachers in their recorded presentations. The panel included the three methodology lecturers (Mathematics, Languages, ICT), a lecturer from the Department of Media Studies, and an educational researcher who had taught in secondary schools for many years. All members of the panel were experienced lecturers. The methodology lecturers were all former secondary teachers and the lecturer from the Department of Media studies had extensive experience in the film and television industry. The assessors rated each presentation according to the following criteria:

(1) The quality of overall presentation performance
(2) The quality of body-language
(3) The quality of voice
(4) The quality of words used
(5) The alignment between body-language, voice and words
(6) The confidence of the presenter
(7) The clarity of the presenter
(8) The extent to which the presenter was engaging
(9) The appropriateness of the presenter's presentation

We categorised the body-language, words, voice and alignment variables as the *Modes of Communication*, and the confidence, clarity, engagement and appropriateness variables as the *Constructed Impressions*.

In order to develop standardised conceptions of the nine criteria, the research team discussed and determined boundaries between the communication elements. For example, we decided that Criterion 4 (quality of words used) would be measured as if the presentation were written as a script, rather than according to the manner in which the words were spoken (as this would be Criterion 3, quality of voice) or the quality of discipline specific information provided (as this would relate to subject area knowledge rather than communication competence).

Over a period of one week each assessor independently rated a random selection of ten videos as a pilot study. These ten videos were taken from participants who had not recorded all four topics and hence not from among those which were included in the final data-set. The assessors rated each of the criteria as a score out of ten.

The assessors then met to discuss their results for the pilot study sample and agree on a consistent approach to rating the 164 recordings (four presentations from each of 41 participants). As a result of the sample rating process we determined that it would not be feasible or reliable to provide descriptions of performances at different levels for each of the criteria, given the multiplicity of factors that could affect the preservice teachers' performance in a particular item. For instance, differentiating among high, medium, and low performance levels for Criterion 3 relating to quality of voice was problematic because a variety of factors such as tone, rhythm, and projection could contribute to vocal quality in many different ways. Instead, we decided that the most appropriate way to assess each criterion was to define in detail the specific characteristics of poor and excellent performance for each one and rely on the expertise of the raters to allocate a mark from zero to ten. The descriptions of poor and excellent performance are provided in Table 1 (for the Modes of Communication) and Table 2 (for the Constructed Impressions).

Modes	Poor performance	Excellent performance
Body Language	• Moving around too much • Shuffling • Slouching • Rigid stance • Withdrawn posture • Defensive arm positioning (folded arms, hands in pockets) • Flapping hands • Wandering eyes • Shoulders hunched • Head down • Distracting/unclear gestures • Stiff gestures • Cold/unexpressive facial expression	• Centred • Open body posture • Upright • Shoulders back • Head up • Hand/arm gestures to emphasise point or convey meaning • Inclusive eye contact, • Relaxed stance • Expressive gestures • Smooth gesture • Warm facial expression
Voice	• Contrived • Too loud/soft • Monotone • Stammering • Unclear enunciation (e.g., heavy accent, mumbling) • Too fast/slow	• Natural • Appropriate volume/projection • Melodic variety/intonation • Clear enunciation • Appropriate pace
Words	• Unexpressive • Negative • Poorly organized/structured • Confusing meaning • Not inclusive • Inappropriate slang (e.g., kids, dropping ‘g’, gunna, you know) • Too many pausing/filling words (‘ums’ and ‘ahs’) • Poor use of humour	• Colourful/expressive language • Positive • Structured/organised • Clear meaning • Inclusive • Register relevant to audience • Positive use of humour • Use of strategies (such as rhetorical questions) to engage
Alignment	• Disparity between message and body/voice/words • (Messages mixed)	• Congruence between body/voice/words • (Messages aligned)

Table 1: Characteristics of poor and excellent communication performance for the Modes of Communication (body language, voice, words and alignment)

Constructed impressions	Poor performance	Excellent performance
Confidence	• Appears anxious or apprehensive • Manner conveys nerves, lack of authority or connection • Inflexible – working from fixed script	• Appears relaxed and stable • Speaker manner conveys their knowledge and authority, their relationship with audience • Flexible
Clarity	• Meaning difficult to understand	• Meaning easily understood
Engagement	• Appears uninterested in presentation/lacks enthusiasm • Impression that audience would be bored, unmotivated, easily distracted, even alienated • Lacks impact • No interaction/does not connect	• Interested and enthusiastic • Anticipate that audience would likely be engaged, interested in presentation • Makes an impression • Interacts/connects
Appropriateness	• Content and delivery unsuitable • Talking to wrong level of audience (context)	• Content and delivery (language register) both suitable for a particular audience • Talking to the level of the audience and situation (context)

Table 2: Characteristics of poor and excellent communication performance for the Constructed Impressions of Communication (confidence, clarity, engagement and alignment)

Once the characteristics of poor and excellent performance were finalised, the assessors began individually rating the 164 presentations. Assessors agreed that before rating each of the specific performance criteria they would first award an overall score for the presentation based on an evaluation of it as a whole. This was done so that the component scores would not influence the assessor's first impression of the performance.

Marks from the five assessors for each presentation were averaged to give a final score out of ten for each item. For example, the five scores for engagement were averaged across the five assessors to form a single overall score for engagement for a particular presentation. The scores were averaged to minimise the impact any individual assessor might exert if he or she scored relatively higher or lower than other assessors. A relative measure, the intra-class correlation, was therefore used to calculate inter-rater reliability since this correlation value is appropriate for calculating reliability for quantitative (rather than categorical) measures. The intra-class correlation with a consistency model was calculated, with the average rater ICC = .71. Note that the single rater ICC is not relevant here as only average ratings of all raters were entered into analyses. A series of within-subjects ANOVAs were carried out using video number as the within-subjects factor, with four levels. Separate analyses were conducted for the overall rating, and for each of the mechanics and perceptions variables.

The Macquarie University Human Ethics Committee approved all ethical aspects of this study. Students were informed about the study at the beginning of the semester, that data collected may be included in publications, and that they could withdraw their contributions at any time without penalty. Students who agreed to participate in the study signed consent forms which set out in detail the privacy provisions of the study. In particular, they were informed that the online system was password protected to ensure privacy and that only the students from each respective methodology class and the researchers would have access to the video recordings which were uploaded to the online system.

Results

The results focus on pairwise comparisons between consecutive time points (i.e., Time 1 to Time 2, Time 2 to Time 3, Time 3 to Time 4) and between Time 1 and Time 4. Significance levels for pairwise comparisons are Bonferroni adjusted for multiple *a priori* contrasts and compared to an alpha level of .0125. See Figure 2 for overall scores against time, Figure 3 for individual Modes of Communication variables over time, and Figure 4 for Constructed Impressions variables over time.

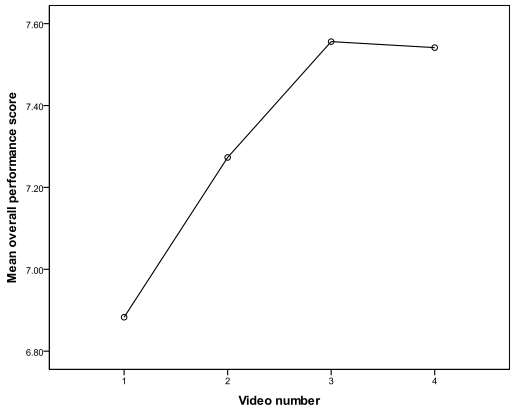

Figure 2: Mean overall performance score by video number

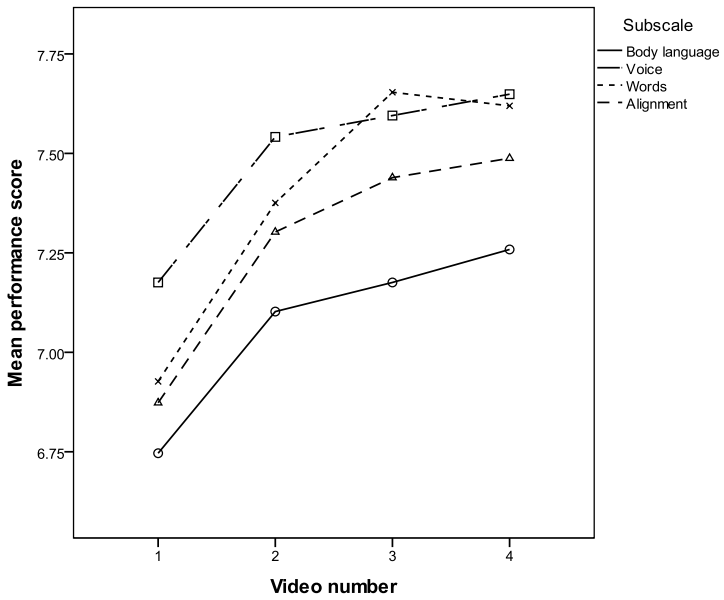

Figure 3: Mean Modes of Communication performance scores by video number

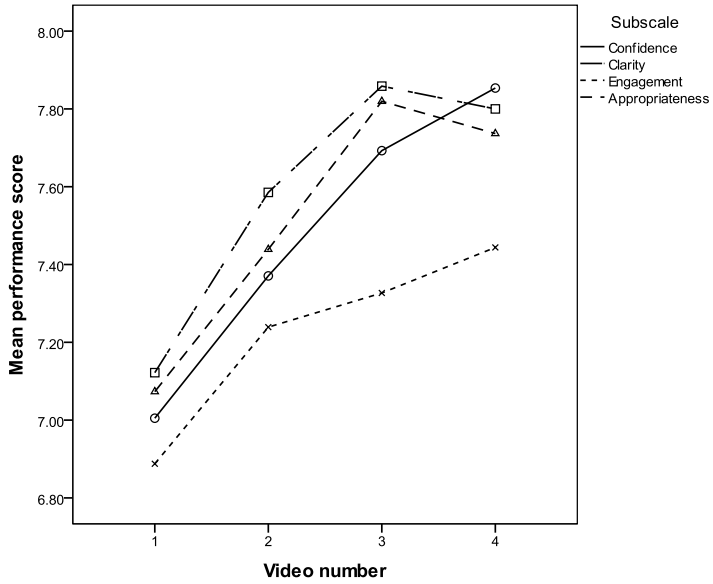

Figure 4: Mean Constructed Impressions performance scores by video number

Table 3 indicates that while all variables showed significant overall increases (i.e., Time 1 to Time 4) and also significant initial increases between Times 1 and 2, only words, confidence, clarity and appropriateness showed significant improvements between Times 2 and 3, and no variables showed significant increases between Times 3 and 4.

	1 vs 2		2 vs 3		3 vs 4		1 vs 4	
	$F(1, 40)$, p	Partial η^2	$F(1, 40)$, p	Partial η^2	$F(1, 40)$, p	Partial η^2	$F(1, 40)$, p	Partial η^2
Overall	20.15, <.001*	.33	6.70, .013	.14	0.06, .81	.001	41.50, <.001*	.51
Body language	14.24, .001*	.26	0.44, .51	.01	1.68, .20	.04	22.22, <.001*	.36
Voice	22.15, <.001*	.36	0.42, .52	.01	1.00, .32	.02	25.11, <.001*	.39
Words	24.91, <.001*	.38	11.33, .002*	.22	0.26, .62	.006	39.33, <.001*	.50
Alignment	25.78, <.001*	.39	1.89, .18	.05	0.48, .49	.01	39.04, <.001*	.49
Confidence	25.67, <.001*	.39	15.08, <.001*	.27	5.70, .022	.12	79.50, <.001*	.67
Clarity	26.77, <.001*	.41	8.02, .007*	.17	0.82, .37	.02	39.79, <.001*	.50
Engagement	14.64, <.001*	.27	0.68, .41	.02	3.12, .09	.07	19.84, <.001*	.33
Appropriateness	9.91, .003*	.20	8.58, .006*	.18	2.61, .114	.06	34.78, <.001*	.47

Table 3: Pairwise comparisons between time points for the overall score and for each variable

A student's blog posts and peer feedback comments illustrate the role of personal reflection and peer feedback over time. In her second video reflection, the student noted some of her communication skills while also identifying an area on which to focus in her next presentation:

> I found that I was a lot more confident this time than my previous recording, and that I communicated my message clearly to the intended audience. I was still a

> little unprepared and hesitant while I was speaking, but definitely an improvement on my last attempt. I still want to focus on my body language being a bit more engaging – maybe not standing in one place, and using more hand gestures.

Feedback was then provided to the student from peers. One such comment included an affirmation of some features of the student's presentation alongside suggestions for improvement:

> You spoke with confidence and hand gestures. On your first communication reflection I found it difficult to hear what you were saying but this time it was much better. Although I thought you did this task well, maybe you could work on speaking with more expression, to keep the parents engaged and listening.

Reflecting on her third video, the student incorporated the previous feedback on speaking more expressively by referring to her pace and tone:

> I think that I conveyed my message effectively to the students. I was more prepared with what I was saying, which allowed the speed and tone of my voice to be appropriate for the intended audience … I still stood in the same position while I was speaking.

A blog comment from another student provided feedback on the third video, further affirming the improvements in vocalics and encouraging further development of gesture and movement:

> Your tone, pitching, pace and projection was very effective in communicating with attention drawn to you. … One criticism I will make is the static body language. Even though I could tell you were moving your hands to a small degree, it felt like you were just standing in front of the year group giving a lecture. … A little more body movement may have engaged your audience to a greater extent.

In her final video reflection on the fourth presentation, the student acknowledged her improved body language:

> I think that my final video presentation reflected improvements in my communication skills compared to the earlier presentations. My word usage was appropriate, and I spoke with clarity. In terms of body language, I used eye contact and hand gestures quite effectively (besides for when my hands were directly in front of my body).

A final post from another student showed recognition of the ways that the student had used peer feedback to gain insight into her communication skills and improve her performance over the course of the project:

> What a great way to finish off your video reflections! I like the way that you took onboard feedback from the previous videos. As always, you speak calmly and confidently. You choose your words well and rarely stumble.

The video reflection system incorporated three crucial elements to aid the cycle of reflection and improvement: self-reflection, reflecting on presentations made by peers, and responding to feedback from peers. Feedback from the student survey indicated that viewing and reflecting on their own presentations allowed students to notice mannerisms and other aspects of their communication style to focus in preparing their subsequent presentations.

> As difficult as it may be for most of us I do believe it is good practice for us to watch ourselves. There are little habits and mannerisms that I would not pick up had I not seen the video recording.

> I felt that I have improved a lot since my first presentation. I was able to analyse myself a lot better and to continually improve my communication skills.

Reflecting on videos from peers enabled students to develop a greater awareness of key elements of effective communication which they could incorporate into their own presentations.

> Commenting on others' videos and assessing their videos definitely improves my ability to interpret the communication of others.

> Seeing everyone's videos has given me ideas for future presentations and presentation styles.

Receiving feedback from peers also allowed students to moderate their personal reflections and broaden their views about their own communication skills.

> Getting positive comments from others, and being able to see how you actually look and sound to an audience.

> I could see how others see and hear me. I was able to change my presentation according to how I feel my audience sees me.

Discussion

The study investigated the extent to which preservice teachers who used the video reflection system to view and reflect on their own presentations as well as those of their peers would improve aspects of their communication performance. Between the first and fourth presentation, all factors showed improvement, with the highest improvement in *Confidence*. The lowest improvements were in *Body Language* and *Engagement*. The results for *Body Language* support the notion that preservice teachers tend to ignore non-verbal aspects of communication. The low result for *Engagement* might be explained by the difficulty in giving a presentation to one person operating a computer rather than an actual audience.

The results indicate that preservice teachers may benefit from opportunities to practise and reflect through improved confidence and performance. The video reflection system used in this study allowed preservice teachers to view their own presentations and those of their peers multiple times, reflect upon them, and consider the feedback they received from others. The iterative process of viewing and reflecting improved the participants' communication competence across the three domains described by Morreale et al. (1993), namely the cognitive, behavioural, and affective domains. The role of reflection is particularly important in two respects. Firstly, by reflecting on their own performance and comparing it to their peers, students focussed more carefully on their communication strengths and weaknesses and were able to take a more objective view of their performance. Secondly, the feedback received from peers assisted the preservice teachers to identify aspects of their performance that they might not otherwise have considered. We have described the nature of the reflective comments and the value placed on them by participants briefly in this paper. For a fuller discussion of this aspect of the study see Bower et al. (2011).

The significant improvements from Time 1 to Time 4 across all of the nine criteria that we assessed confirms the results obtained by Zhang et al. (2011). For all factors, the largest improvement was shown in the second presentation. However, given that most people are unaccustomed to being filmed it is possible that some of the improvement from the first presentation to the second might be due to the participants' growing familiarity with the video reflection process. Hence feelings of anxiety associated with the first presentation might well have been alleviated to some degree by the second.

The results for Time 2 show that even minimal opportunity for observation and reflection may lead to considerable improvement and that a strategic focus on communication competence is particularly valuable for preservice teachers. The highest gains from Time 1 to Time 2 were in *Clarity* and *Alignment* while the lowest improvements were for *Body Language* and *Appropriateness*. The low result for *Body Language* is consistent with the overall poor results for this factor, while the low result for *Appropriateness* may be explained because preservice teachers are unlikely to have experience with the context for the second presentation (presenting my teaching subject at a parent-teacher evening). This suggests that

learning and teaching contexts might be more appropriate for beginning teachers as they are more accustomed to classroom settings.

Communication competence improved across all nine variables from Time 2 to Time 3; however, only *Words, Confidence, Clarity,* and *Appropriateness* did so significantly. Importantly, the *Confidence* variable increased more than any other communication element from Time 2 to Time 3, providing evidence that the video reflection process can play a crucial role in developing preservice teachers' communicative self-assurance prior to entering the workforce. Of the four elements that did not improve significantly, three (*Body-language, Voice,* and *Alignment*) comprised the Modes of Communication. This indicates that Modes variables require more attention and may take longer to develop. Clearly these items have more scope for improvement by preservice teachers. The relatively small improvement in the Modes of Communication elements may also be related to the context for the third presentation (addressing a school assembly) which may indicate some difficulty in simulating large-scale presentations using a laptop computer without an audience.

There was no significant improvement in performance for any of the communication variables from Time 3 to Time 4. This could imply that three iterations are sufficient to ensure improved communication performance without the risk of the diminishing returns that are likely to be associated with further repetitions of the cycle. Other possible explanations to account for the lack of improvement between the third and fourth iteration could be that the students regarded the fourth task (Farewell talk to their class on the last lesson) as less authentic than the other tasks. Consequently, the participants found this task more difficult in terms of knowing what to say, and a degree of participant fatigue may have set in by the fourth iteration. The students may also not have treated the fourth task as seriously because they were nearing the end of the university semester.

As with any research, the results of this study need to be considered in light of their context and limitations when attempting to transfer findings to other settings. This study examined preservice teachers' video-recording trial presentations in pairs. Different results may have been achieved if a different cohort of participants was used or if presentations were delivered to a larger audience. Also, the presentations were made throughout the year while the participants examined some theoretical and practical aspects of communication for teaching during their teacher education studies and completed their in-school professional experience program. Hence it is possible that their concurrent classroom experiences might also have contributed to some of the gains in the preservice teachers' communication competence.

Conclusion

The results of the study have implications for the design of communication activities in teacher education programs. Clearly, there are benefits for preservice teachers when they focus explicitly on tasks directed at developing their communication competence. Even a small number of such tasks can assist preservice teachers to become more confident and competent communicators. The results of the study therefore suggest that communication activities should be a central feature of teacher preparation courses, especially when the communication tasks include opportunities for preservice teachers to observe and reflect on their performance and that of their peers.

There are some limitations of the study. We analysed the presentations from the 41 students who completed all four activities and it may be that the other 20 students who were excluded would not have been as successful in improving their performance. Also, since there was no control group, the benefits reported here may be due to the expected growth in

performance of teacher education students from practising their communication skills rather than from the intervention. The presentations were made without an audience and this may have had an impact as well. We also think there may be value in providing preservice teachers with the criteria by which their presentation will be assessed to assist them in focusing on key features of presentation performance.

The research described in this paper could be extended in some important ways. Future research might investigate the impact of a video-based reflection system when used in presenting to a 'live' audience in more authentic classroom settings. There is also the potential for investigating the robustness of the categories for the Modes of Communication and the Constructed Impression of the communication acts with other groups of preservice teachers. Finally it could be possible to examine whether additional interventions, for instance expert modelling of communication competencies, could lead to further improvements in preservice teacher performance. Along with the results of this study, these lines of research would serve to provide an evidential basis for the development of preservice teacher communication competencies in accordance with calls from researchers (Özmen, 2010) and as implied by Australian Professional Teaching Standards (AISTL, 2011).

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