Instructional dissonance during interactive television support broadcasts – a South African experience

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Abstract

This case study focused on a community outreach initiative in South Africa and sought to explain why – despite technology that permits bi-directional oral communication during televised instruction – viewer participation was poor. A small-scale quantitative approach established *how* prevalent poor participation was, while rich experiential interviews and video data identified *why* viewers refrained from participating overtly. The use of *Atlas.ti*™ to analyse systematically the volume of unstructured data as a single unit not only facilitated analysis, but also enhanced the validity of the inquiry. Key findings suggested that the rate of viewer participation during telelessons was not directly influenced by their English proficiency, as initially anticipated, but by a combination of variables related to technical limitations and inappropriate methodological design. This article focuses specifically on the instructional dissonance created by telepresenters, and how this accounted for viewers not responding as expected during televised instructional episodes. Implications for practice are deemed applicable in any blended learning environment.

INTRODUCTION

This article relates to the challenging field of interactive instructional television (ITV), and describes a community project in South Africa which aimed to help senior secondary school learners prepare for their final exit examination. Focusing on the telepresenter as one of the variables, it also explains why viewers

refrained from participating during broadcasts, even though technology permitted bi-directional audio links. The unit of analysis shared many characteristics of traditional distance learning courses – primarily that of geographical separation between sender and receiver. However, its nature was chiefly service-oriented, participation was voluntary, implying that viewers were not dependent on watching broadcasts in order to be academically successful, and the transmitting institution conferred no formal qualification. Furthermore, although broadcasts were transmitted after school hours, they took place in real time.

A pilot study did not adequately isolate a single factor that could account for low viewer participation (Evans 2004). This preliminary investigation suggested certain strategies to elicit better responses during televised instruction, but despite applying these, the rate of both synchronous and asynchronous interaction remained noticeably low. Several subsidiary uncertainties relating to the lack of oral interaction were evident, yet our premise remained that limited proficiency in the language of instruction – English – was the primary cause of low reciprocity. As the inquiry progressed, it became evident that this initial proposition was not entirely defensible. We now proceed to describe the project and the rationale for the inquiry, focusing specifically on the role of the telepresenter, since factors relating to the viewers have been discussed elsewhere (Evans 2007).

CONTEXTUALISING THE PROBLEM

Digital satellite technology provided by sponsorship money was used to transmit instructional broadcasts to 72 schools primarily located in under-developed rural areas of South Africa. The intention of the project was not to replace educators at schools, but to provide further support to viewers in the more difficult aspects of Mathematics, Physical Science and English. Logistics, however, prevented printed support material being offered. This initiative was aimed at viewers aged 17–19, who watched 90-minute lessons four afternoons a week of the academic year. An average of 30 hours per academic subject was screened annually and the national core syllabus was the main guide to planning lesson content. Potentially, several thousand Grade 12s could have watched the daily broadcasts. It was also the anticipated size of the audience that had created the expectation of greater viewer participation. The presenters had no participants at the origination site, and when talking to the camera, visualised a group of approximately 30 viewers at the various remote sites.

The primary mode of content delivery during each broadcast alternated between traditional 'talking head' explanations, and any visual material the presenter used to clarify concepts. A key feature, however, which distinguished this educational project from similar ones, was that viewers could ask questions

at any time during a broadcast, to which the presenter would then respond immediately. This bi-directional audio communication during a broadcast was established telephonically. The viewer's toll-free phone call was piped into the studio, while the presenter's response was transmitted directly on air using a microphone. Direct interaction was initiated as part of the instructional design, or during a planned Question-and-Answer slot. An invitation to call in to the studio with comments or queries was also regularly crawled across the screen as a chiron. Phone calls or faxes received after the broadcast were dealt with during the subsequent session.

This ability to interact was used as a marketing ploy based on the widely accepted premise that interaction improves learning. However, anecdotal evidence indicated that viewers were not interacting freely with the presenter during broadcasts. Concerns started growing that no one was even watching the lessons. It was the viewers' silence – their lack of oral interaction – that prompted our inquiry. Although the host institution was a local pioneer in technology-supported learning, it did not have sophisticated equipment such as multi-site linkages and two-way video channels. Yet this alone could not have accounted for the poor responses. So what was hampering verbal interaction during the televised lessons?

Oliver and McLoughlin (1997, 360) purport that 'the actual communications and interaction that occur with these technologies, demonstrate in many instances an under-utilisation of the opportunities', endorsing sentiments that at its worst, interactive television makes it harder for the teleteacher to facilitate and easier for the viewer to disengage. Such claims acknowledge the complexity of televised interactions, but do not shed light on the reasons for poor interaction. The purpose of this study was thus to identify possible reasons for low levels of viewer–presenter interaction during televised instruction in a developing country context.

RESEARCH DESIGN AND METHODOLOGY

The formulation of the research question favoured a case study, and although this research design was interpretative, we used a small-scale quantitative approach (percentages) in order to establish *how* prevalent poor participation was, while a more personalised experience (obtained by means of qualitative data) suggested reasons *why* viewers refrained from interacting. The primary informants were nine subject experts who presented telelessons, close on 300 viewers and five site facilitators. We undertook fieldwork at several sites related to the participants' immediate domain, i.e. viewers and facilitators were interviewed at schools in urban and rural areas, and presenters at the studio facilities. We also used multiple

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data sources and collection methods in order to establish more accurately factors that were inhibiting oral interaction during a televised lesson. Eight instruments were employed for data collection, viz.:

- A once-off questionnaire survey completed annually by different viewers;

- A single face-to-face 20-minute group interview with regular viewers at six geographically different sites;

- Frequency counts of viewer interactions, as logged by presenters and technical staff;

- Nine telepresenters were interviewed in person;

- Language proficiency profiles were drawn from the viewer interview data using standardised assessment rubrics;

- A narrative schedule based on field notes and reflective comments was drafted;

- Telephonic interviews were conducted with five site facilitators;

- A structured analysis of 24 hours of archived, authentic video material was done.

We had hoped to triangulate the oral responses of the viewers with the presenter logs and then bear this out with an analysis of the televised presentation of content matter using a formalised taxonomy of interaction strategies, developed by Fulford and Zhang (1993). However, after watching only three broadcasts – a telelesson from each subject – the only semblance of interaction that was evident, was an occasional rhetorical question asked by the presenters. The level of presenter-initiated interaction was too low to produce reliable data and we viewed the next episodes focusing more on the instructional design, using an elementary evaluation sheet originally designed for presenters as a self-evaluation tool. We carried out the post-transmission observations at different times of the day, in order to prevent fatigue bias. The first viewings were done cold, i.e. we had no prior idea of the content or presenter. As we viewed the broadcasts, we made copious notes of our observations and personal reactions.

Concurrent to data collection, we prepared all responses for electronic scrutiny and a rigorous data analysis process ensued using Atlas.ti™. A lengthy and intense process of coding, categorising and connecting themes, or as Merriam (1998) describes the process of making meaning: 'consolidating, reducing, and interpreting' the selected data, followed. The search for relationships or patterns, silences or unexpected trends all formed part of the continuous analysis and

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interpretation of data. Three themes with related sub-divisions pertaining to the presenter, viewer and ITV context emerged from this process, and appeared to answer the research question relating to poor viewer participation. Our ultimate grouping accounted for all data collected and was collapsed into a single data set. Much of what constrained interaction was linked to presenter-related factors, rather than viewer inhibitions or linguistic shortcomings, as initially thought. This article focuses in particular on misconceptions shared by the presenters as well as on how dissonance and mismatch affected instructional design and delivery, and thus interaction.

ANALYSIS OF PRESENTER-RELATED FINDINGS

Presenter profile

Presenters were keen to participate in this project and managed to stay enthusiastic, although personal and professional commitments did result in two presenters withdrawing after only a few broadcasts. Five of the nine persons interviewed were native speakers of English, although the other four had native-tongue proficiency. In Table 1 we present as detailed a profile of the presenters as research ethics permit, in order to maintain anonymity.

Table 1: Presenter profile

Subject presenter	Gender	Age*	Period of involvement	Teaching experience	Mother tongue
1	F	40+	4 years	Secondary school	Afrikaans
2	F	60+	7 years	Higher education	English
3	F	45+	6 years	Secondary school/ part-time lecturer	English
4	F	45+	5 years	Private tutor	English
5	M	55+	6 years	Higher education	Afrikaans
6	F	30+	1 year	Secondary school/ part-time lecturer	English
7	F	60+	4 years	Private tutor	English
8	M	30+	1 year	Higher education	Tswana
9	F	40+	1 year	Higher education	English
10**	F	65+	6 years	Higher education	English

* increments of five years
** electronic interview

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Although gender and ethnic representation may not have been favourable, the collective teaching experience of the presenters was notable.

We next discuss the misconception presenters had of interaction via television as well as some dilemmas related to their instructional design and delivery.

Misconception of interaction

Presenters all defined interaction as nothing more than a viewer's oral response to a question. They shared Winn's view (1989) that it was the presenter's responsibility to initiate it and most felt it was essential for learning, yet they did not plan for it, allowing viewers 'to gravitate to a passive role during the instructional process' (Barker 1995, 8). Presenters believed they had to wait for a viewer to call before any form of dialogue was possible, and although they extended general invitations to call in, they did not have an established place for interactions in the lesson design. An unusual tension also existed between presenters lamenting the lack of interaction, yet considering it advantageous being able to teach without interruption. As several presenters explained, the best thing about teleteaching was that

> you can just waffle on and on, perhaps that's a good thing, there's no interruption, I don't know but I mean there's no interruptions, so you can go through your lesson beautifully in your allocated time and you can do all your examples, so that there's no frustration or having to digress and go off at a tangent to explain something else because nobody asks any questions.

Similar comments highlighted the presenters' limited understanding of what interaction is or how they could create opportunities for it.

Instructional design dilemmas

Instructional design pertains to the systematic presentation of the subject content and to how learning activities are organised (Van der Walt et al. 2009). Without exception the presenters were extremely well prepared, yet they were unable to design appropriate telelessons despite their comments on how much time they spent planning. It was also apparent that presenters had transposed their face-to-face teaching strategies to the ITV environment without modification. This perpetuated the belief that teleteaching was the same as traditional classroom teaching, even though it took far more time to prepare (see Cyrs and Conway 1997). One presenter admitted:

> May I be honest, preparing myself, it takes loads of time, I present for 90 minutes but believe me, it takes about three hours to prepare a single session, it's not something that ... especially in the case of mathematics, it's not something that you just pitch and deliver, it doesn't work that way. So it's a very time-consuming exercise.

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Target audience

Before any meaningful instructional planning can be done, (tele)teachers need to have a sound knowledge of their target audience's needs and expectations. Presenters had a very limited sense of the context of the viewers as well as their academic abilities, and assumed much about the viewers' culture, background, prior knowledge and experience. This was evident not only from the lessons observed, but also by their own admission:

> *Presenter 6: [I know] very little apart from them being from previously disadvantaged backgrounds, I do have access to the list [of schools] and I've actually sent stuff to the different schools, like maps and things like that. And they do seem to come from areas where I actually wonder if they even have electricity at times.*

> *Presenter 7: [I don't know] … very much, I must be honest, I think we had, there were two meetings where there were some teachers from the school present, but even at that meeting I wasn't able to get too much background as regard to the children that I was teaching. I wasn't sure about what they were like, what their home backgrounds were like, what their mathematical ability, did they have a foundation or not?*

It remains unclear what presenters could have done to ascertain more about their target audience due to its diversity and anonymous character, but without knowledge of a target audience no meaningful learning outcomes can be formulated. It is regrettable that presenters neglected the advice offered by Bosworth (1991, 89), who states: 'The preparation of any learning material must start with an analysis of what is to be learned, who is to do the learning, where the learning is likely to be done, what equipment and tutor or mentor support is available. This is followed by decisions on which techniques or technologies will be most effective.'

Lesson planning

Implementing technology in the instructional process requires even greater attention to lesson design and instructional preparation than would ordinarily be the case (Dede 1996; Main and Riise 1995; Mason 1978). Lesson planning seemed governed by the rigidity of transmission time, rather than how best to enhance viewer performance. Not having clear, well-defined learning outcomes for each broadcast was the chief lacuna in the instructional design. Lesson structure here implies the planning of all activities that make up a transmitted episode and constitute the instructional message. It was not clear whether presenters actually had a written lesson plan, but most presentations lacked a notable structure. A general lead-in statement, either welcoming the viewers or referring to some aspect of their immediate context, e.g. cold weather, introduced

each session. This was followed by what the presenter hoped to do during the remaining minutes of the broadcast. The content discussed pertained to isolated topics, with no main component or supporting exemplification.

Although opinions differ on the length of an instructional segment, 'chunking' is considered a vital aspect of instructional presentation, i.e. introducing some task or opportunity for interaction, every five to seven minutes after an exposition of new information by the presenter (Cyrs and Conway 1997). Not only does this change the pace of the presentation, but it also allows for easier processing of the information. Several telelessons had distinct sections or topics that could have afforded solid teaching chunks, but presenters did not capitalise on these, rushing to finish within the allocated time. Two presenters in particular were also inclined to interrupt themselves and shift topic, causing much confusion for the viewers: ' … she could pick something and then suddenly she is in another topic I did not understand. We did not have that conclusion from the previous one; she was already somewhere [else].' Mathematics lessons contained more 'doing', i.e. active problem-solving tasks than the other subjects, although insufficient time was given for their completion. These presenters relied very heavily on writing out calculations, resulting in viewers watching a disembodied hand drawing symbols, while a faceless voice explained simultaneously.

Generally, the presenter played the role of reactive information supplier and primarily talked at the camera, giving a sequential explanation of the selected content. No tasks which stimulated critical thinking or high-order learning, were planned. Yet there are limitations to the types of activities suitable in the ITV environment, as encountered by these presenters:

> I tried, with the lesson plan, I wanted to have a sequence of events where we reach a conclusion, so the thing wasn't left in the air, especially with the Maths, I think it's better if one does reach a bit of a conclusion, or I suppose we could have come back to it in the next lesson.

Presenters assumed concept knowledge and although they only expected lower-order mental processes, information overload predominated, even though these broadcasts were considered revision sessions. Thirty-seven quotes indicated a mismatch between viewers' expectations and content discussed. In some cases, work was dealt with which had not yet been done by the viewers in class. Blame for this cannot be ascribed to the presenters, as teachers work at their own pace and the only national deadline is late October, when final examinations commence.

Instructional delivery dilemmas

Despite training workshops and printed guidelines that had been made available to the presenters, stilted 'talk-and-tell' presentations occurred. Literature relating to

interactive teaching environments use adjectives such as *interesting*, *absorbing*, *mental engagement*, *arouse enthusiasm*, *stimulate interest*, *exciting*, *refreshing*, *imaginative* and *exhilarating* to describe some of the principles pertaining to an animated delivery. Few of these adjectives matched what was evident on screen.

Visual appeal

Instructional television broadcasts transmitted using a static camera require a particularly animated delivery, to ensure visual and aural impact. Presenters were all immaculately groomed and the general impression of a 'talking head' was agreeable. As appearance guidelines (Evans 2000) had been followed, little distraction occurred due to vibrating patterns or stark colours. Yet more is required to reduce the 'talking head' monotony.

Including visual material such as pictures, models, graphs or written explanations in a telelesson also allows technicians to switch from a full-screen shot of the presenter to the overhead document camera trained on the graphic representation. The document camera is a positive enhancement of the delivery system, as it can greatly magnify minute detail for large audiences to see simultaneously. However, the length of time during which it is trained on the visual aid is important, or else viewer frustration occurs: 'They are to [sic] fast. I get confused because I am trying to write some notes and on the order [sic] hand I want to listen and they remove their paper very fast.' Visual learning and teaching materials used in ITV delivery may thus require the presenter to gauge the situation (McKenzie et al. 2002), but the same design principles as for designing face-to-face materials in a traditional classroom apply, namely visibility and legibility. The appropriate choice of colour, font type and size, use of animations and format of graphic material cannot be compromised.

Although the media used were appropriate for the target audience, presenters needed guidance in using their visual material effectively. A principle unique to television is aspect ratio, which refers to the horizontal orientation of a television screen (i.e. three units high by four units wide [3x4]). Not all visuals conformed to this format and the overhead camera either cropped text at the bottom or revealed the desk. Presenters could also have benefited from leaving a margin, invisible to the viewer, in which to write their notes. This scanned area does not appear on camera, but serves as a border to essential information that must not be cropped by the camera. Readability is a non-negotiable factor when using visual tools – a powder-blue background with simple, bold letters in light foreground text is ideal (Cyrs and Conway 1997). Most presenters used white paper that reflected a glare at times. Not all handwriting or print was visible, usually because the camera had not zoomed in close enough. Some hand-drawn graphics needed bold lines

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and should have been drawn with a thick marker pen, rather than a ballpoint. Colours, in particular red and green, were not always distinguishable. Some electronic presentation slides lost fine detail and the projected colours differed from those chosen for electronic slides due to the inherent characteristics of TV. The quality of presentations would have been greatly enhanced had the character generator been used to display key concepts, new terminology or a summary of the lesson outline. Furthermore, camera work was not effective and the ability of technology to magnify visual material was not utilised sufficiently. Sadly, in some instances a well-prepared presentation was marred by unsatisfactory technical support. Shadows obscured images and in places the shot was out of focus. Closer cooperation with the technical crew was required.

Immediacy behaviours

Verbal immediacy behaviour refers to any attempt at decreasing the psychological distance and establishing a positive affective atmosphere (even at a distance) by making encouraging remarks and personalising the lesson, e.g. using first names, praising the viewers or introducing humour. Nonverbal immediacy behaviour relates to smiling, a relaxed body posture and vocal variety (Dillon and Walsh 1992). Judging from the following quotes, presenters' encouraging and relaxed attitudes ought to have alleviated possible viewer intimidation:

> *Presenter 1: So you do try to do some humour and things like that, the problem is you're never sure if they're appropriate because you don't know your audience.*

> *Presenter 4: I can remember somebody called Naomi, I've said Naomi has just called from a school in Hammanskraal and I just want to say how delighted I am you phoned, you asked a very important question and I'm sure lots of people were very worried about this, so well done Naomi. So I try to make them think it was really great to ask the question.*

It is difficult to divorce immediacy behaviours from communication skills, since the choice of words and paralinguistic features determine much of the affective atmosphere experienced by viewers in an instructional situation. Presenters' oral communication skills were rated highly by 63.5 per cent of the viewers, who felt the presenters had explained everything well. However, these complimentary comments were off-set by the 36.5 per cent who disagreed, specifically highlighting the speed of delivery. After being encouraged to use his mother tongue, a viewer from site #1 wryly stated: 'The presenter when he presents the lesson he goes like we are watching a movie and not like a teacher in a class.' In order to establish whether presenters were in fact speaking too fast, we calculated the speed of their spoken English during televised instruction using a

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manual stopwatch. Only two presenters were markedly fast, four spoke slower than the average rate, while the other three presenters had an acceptable rate of spoken discourse. However, what was audibly manifest was that presenters did not pause between statements, thus not allowing for time in which viewers could process the input aurally and cognitively. It was this lack of 'silence' as well as insufficient verbal signposting that created the illusion of speed.

Nunan's (1991) warning that wait time is imperative in the second-language classroom, as 'greater processing time [is] required to comprehend and interpret questions', was not heeded. Lengthier wait periods may have permitted the viewers to formulate questions or comments in English, the medium of instruction, which was not their primary language. Dillon and Walsh (1992) also report using silence as a means to encourage cognitive digestion. Without allowances for discussion or 'think time', viewers had no chance to actively reflect on what they saw or heard, and voiced their frustration as follows: 'This winter school is very well [sic] and the presenters teach us well [sic] than our teachers. But our televised [sic] is too fast and we can't write notes.' Presenters were inclined to give instructions and then fill the silence with repetitive (meaningless) comments and distracting remarks. A detailed discussion of presenter speech has been published elsewhere (Evans 2006).

Apart from the perceived speed and density of content, there was also little attempt to relate the work being discussed to other experiences, and thus it is doubtful whether any sense of understanding was being developed. Presenters should have anchored the content with more concrete and practical applications, and also used more applicable examples. The use of repetition or summary to stress main points was also lacking. Presentations may have been less complicated if generic handouts had been provided to ensure that viewers were all 'on the same page'. It was not uncommon for a presenter to be working from a specific textbook not used in all provinces, or from another edition of a particular prescribed book. Since presenters had no post-broadcast obligation towards the viewers apart from following up on any commitment possibly made during a telelesson, they did not give homework tasks that may have reinforced the newly acquired or revised knowledge. This discussion of the findings has indicated that presenters played a far greater role in orchestrating or suppressing interaction than initially realised, with significant implications for practice.

IMPLICATIONS OF INQUIRY

Although management had anticipated a dialogue-type interaction with the viewers during each broadcast, the narrow definition of interaction being only an oral response to a presenter's questions or challenges may need to change focal

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plane and include more than just being able to speak back to the teleteachers. In terms of the context of this case study, interaction between viewer and presenter was anticipated, although peer interaction (learner-learner) could also have been effected. Logistics prevented the dissemination of instructional resources and post-transmission support, but had worksheets been provided, for example, viewers could have been guided to interact with the standardised content matter (learner-content). In view of these restrictions imposed on presenters, we propose capitalising on a dimension of interaction described in communications science as 'intra-personal communication' (Steinberg 1995). We phrase this intra-action or reflective communication with oneself, in Moore's style (1989), calling it 'I-me' communication. Lauzon's definition (1995, 12) suffices for our explanation: 'Our capacity to reflect on our knowing and reflect on how we come to know in order to derive meaning is essential for personal growth and development and realising our potential. We integrate emerging constructions into our personal paradigm and redefine our relationship with the world.'

Any interchange of meaningful communication should have been encouraged, as reflected in the various types of interaction identified by, amongst others, Moore (1989), Klingsheim and Kristiansen (1993), and Anderson and Garrison (1998) in distance education.

Management and presenters need to reconsider the insistence on oral interaction being desirable, since several studies based on technology-rich environments also indicate that viewer participation is overestimated, and the interactivity permitted by technology, underutilised (Howard 2002; Nahl 1993; Oliver and McLoughlin 1997). The fact that even a face-to-face teaching situation is not necessarily instructionally rich, *per se*, has also been underexposed (Van Dijk and De Vos 2001). Moreover, very specific techniques need to be introduced in face-to-face instruction in order for significant interaction to take place, and unless cooperative tasks are designed, there is little guarantee of this occurring spontaneously. Involving viewers at a distance is no less challenging, but requires a different approach since each second of airtime counts.

Taking the cost of airtime into account, it may be judicious to plan tasks that elicit interaction asynchronously. Apart from creating opportunities for various types of interaction, presenters could encourage asynchronous communication via alternative technologies, e.g. phone calls after broadcast, or e-mails. This mode ruptures interaction (Van Dijk and De Vos 2001), but the advantage of delayed feedback is that it 'provides an opportunity for reflection and deliberation not found in any synchronous learning environment' (Anderson and Garrison 1998, 103). In addition, the frequency of interaction is inversely proportionate to the size of the audience (Borsook and Higginbotham-Wheat 1991). Many viewers

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attempting to participate simultaneously would be foiled by time constraints and logistics, i.e. the availability of incoming lines and inadequate technical support. This would limit the number of synchronous exchanges during a telelesson, and bears out Van Zyl's view that 'ITV initiatives aimed at large numbers cease to be interactive' (1996, 36).

By reviewing the current format of telelessons, a shift in the strong focus on synchronous interaction could be achieved without compromising on an active, deep learning experience or quality education in its broader sense. In the same frame, Moore's 'transactional distance' (1989), Kozma's 'constructs' (1991) that related to physiological and technological interactivity, and Anderson's 'equivalency theorem' (2002) also need further scrutiny. Although Kearsley (1995) also endorses the importance of interaction in contemporary distance education, he admits that 'it is not clear from research or evaluation data that interaction does improve the quality of learning'. Moreover, the concepts of interaction and feedback as key elements of the face-to-face communication cycle need to be deciphered, as they may not be such vital constructs in communication theories related to mass media. Such contentions, as well as the many technical restrictions, advocate using televised instruction as a one-way experience, incorporating principles that hold viewers' attention to the small screen, while elaborating on other forms of interaction, as propounded by Moore (1989), Kruh and Murphy (1990), Fulford and Zhang (1993) and Anderson and Garrison (1995). It may also be cautionary to heed the counsel of Paterson (2004), who explains that where mass media are employed in developing societies, community newspapers and radio prove far more accessible and useful than television. His view, shared by Smith (1995), is that the entertainment function of television overrules all else in the developing world. Television has succeeded as an educational tool only when very specific viewing conditions were met, e.g. small groups with an able teacher to introduce them and lead a discussion afterwards. Van Zyl (1996) also contends that ITV interaction occurs optimally when viewers have a common base of knowledge and are all equally fluent in the language of instruction.

In any instructional episode, the primary message being conveyed is the content of the subject material. In terms of this community project, the nature of television as a mono-directional communication channel complicated the transfer of this message (between presenter and viewer) and its effectiveness considerably. The lack of visual feedback for the presenters hindered the interactive process and, in particular, they experienced a sense of disconnect from the viewers with whom they were communicating. Feedback on the sender's message is thus more than just words, but includes subtle non-verbal clues that viewers have comprehended. In this regard, the role of site facilitators appears to be underestimated (Bader

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and Roy 1999; Hootstein 2002; Moore 1995). They could act as local gauges of the viewers' satisfactory receipt of the message, indicating to the presenter, by phoning in, whether the pace of delivery was too fast or whether the level of explanation was acceptable. How to effectively include site facilitators as part of the instructional team requires further exploration.

Although most presentations were skilfully executed and supported by visual cues, the essential dynamics of the teaching–learning dyad were missing: two-way dialogue. While we agree that the responsibility for initiating interaction lies primarily with the presenters (Barker 1995; Kearsley 1995; Laurillard 1993; Van Zyl 1996), they ought to have engaged viewers as co-participants of the instructional process. The common understanding among participants in a communication episode is that the source (presenter) allows for a response after message delivery. However, presenters did not create opportunities for phoning in, nor did they capitalise on other forms of interaction. We surmise that, in many instances, face-to-face instruction suffers from the same malady.

The literature suggests that not only does teaching via technology require particular skills, but that presenters experienced in and accustomed to teaching face to face will need to learn new skills and apply different strategies in order to be successful (Anderson 2002; Butcher 2002; Cyrs and Conway 1997; Luck 1997; Nahl 1993; Price and Repman 1995; Rao and Dietrich 1998). Cyrs and Conway (1997, 20) specifically state that the lack of staff training is 'the Achilles heel of teleteaching'. Presenters and viewers alike need orientation and training in using the medium effectively. Self-help guides, like those designed by Greer (1995), Klivans (1994), Lawyer-Brook and McVey (2000), as well as the definitive guide by Cyrs and Conway (1997), are better suited to the working schedule of presenters who can consult the relevant sections in their own time after a technical orientation in the studio. Although Beaudoin (1990, 23–27) makes explicit recommendations regarding presenter guidance and states that 'training be continued until instructors have developed protocols for teaching at a distance and have mastered the teaching technologies', further research needs to be done on the type of training ITV presenters require in order to be effective distance instructors.

The concept *grain size* denotes the length of time that a communicative sequence takes to complete, before a next one can be initiated. By implication, the longer it takes before a viewer can interrupt or take action, the less likely it is that there is going to be interaction (Borsook and Higginbotham-Wheat 1991). Teleteachers may thus need to reconsider the rigid structure and very controlled presentation of their lessons, since their current methodological approach does not encourage participation. Where instructor and viewer are separated by distance,

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participatory activities (interaction) require careful planning and instructional design well in advance of the teaching situation (Kruh and Murphy 1990; MacKinnon et al. 1995; Monson 1978). By implication, teleteachers require a sound understanding of interaction as an instructional tool and should know how to design technology-mediated learning opportunities that entail more than just posing a question and awaiting an answer. Having said that, an underestimated element of communication is the use of what Barker (1995) terms 'structured silence'. Effective use of this powerful tool would allow viewers to intra-act, i.e. reflect and process in silence, while engaged with content. Presenters need a well-grounded and coherent perspective on higher-order thinking skills, methodology and using television as an effective teaching medium. Besides the importance of training and adapting for ITV, the optimal choice of instructor may lie in personality rather than experience and teaching expertise, as Main and Riise (1995, 11) suggest that 'distance learning may depend even more on instructor charisma and style than the traditional classroom in which case instructor characteristics are important to examine in terms of their effect on interaction'. Ultimately, the deciding success factor for student participation and satisfaction is the presenter's personality and ability to package and deliver content meaningfully.

Interaction as a basic component of any meaningful communication act is of particular significance in instructional episodes, as learning may not take place effectively. In communication theories, anything that interferes with the delivery or interpretation of a message is classed as noise. By this is meant that although the presenter's message had been formulated carefully and delivered to the viewers successfully via available technology, it was distorted in such a way (by several factors) that the viewers' response was not aligned to expectations. Based on these incongruencies, we propose a theory of instructional dissonance, i.e. the ignorance or denial of hindrances, barriers and distortions that permeate and negatively affect interpersonal communication between instructor and student. Instructional communication is successful but not meaningful, i.e. despite a carefully encoded message, which is sent untrammelled and also decoded (acknowledged) successfully, a mismatch of meaning (sense, utility) occurs. In order to start creating instructional equilibrium again, the importance of a meticulously encoded instructional message, coupled with effective lesson design and apposite presenter behaviour during content delivery, needs to be underscored. In order to restore full balance, dynamics relating to the viewers and technology also need consideration (Evans 2005).

This study has documented a single institutional ITV experience in a developing country context. It suggested that interaction as a variable may be

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redundant in circumstances where technological resources are less sophisticated. However, we deem that instruction via this mass medium may still be effective without synchronous interaction. Although not initially pragmatic, the study has suggested certain strategies for improving practice, and some are applicable to the traditional classroom setting and the current video-conferencing swell as well as any blended means of instruction.

CONCLUSION

This inquiry revealed that presenters played the compounding role in stifling interaction and silencing viewers – albeit unwittingly. These presenter-related factors, rather than viewers' English proficiency, had collectively ensured low reciprocity in the viewer audience. Despite their teaching experience, meticulous preparation and good face-to-face track record, these presenters not only had a misconception of mediated interaction, but also had a patronising view of their target audience. ITV lessons require different strategies and resources, and thus inappropriate lesson designs led to presenters creating few opportunities for synchronous interaction. Learning outcomes were not always clear and 'interaction' was limited to scores of rhetorical questions. Applicability of content was questionable, at times, while implied time constraints also muted any potential attempts by viewers to interact. Although diligent planning, thorough preparation and enthusiastic delivery were evident, the instructional message was not as well crafted as the presenters believed, resulting in instructional dissonance. Not only the formulation of the message, but also the presenters' lack of pauses and pacing negatively affected potential interaction.

The switch from instructional television to an on-line learning environment reflects global trends, but may not be advantageous in a developing world context. Apart from access and connectivity hurdles, computers – unlike television sets – obligate individual rather than communal use, which is disparate with the more collectivist culture evident in many developing countries (Du Plooy-Cilliers and Olivier 2001; Mkabela and Luthuli 1997; Van Staden et al. 2002). Furthermore, the literacy skills required for computer-mediated learning rely on the more sophisticated skills of reading for information and then reacting by typing written text. Television instruction, on the other hand, relies primarily on the basic oral skills of listening and speaking; modes of learning possibly more familiar to those sharing a collectivist culture. We thus believe that television, in the African context, still has much potential for enhancing teaching and learning, despite the migration to e-learning and other sophisticated technologies.

This inquiry has highlighted several communication barriers as intrusive noise elements of instructional communication, and has enhanced our understanding

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of the pivotal role a presenter plays in facilitating interaction during televised instruction. Ostendorf's (1989, 95) view suffices: 'Interactive televised instruction offers a means to carry knowledge to the ends of the earth. It is our job to be sure that instruction is educationally sound, and that it makes the most of its delivery mode.' We thus need to persevere in our quest to perfect interaction in teaching and learning contexts, with particular reference to those mediated by technology, since not only does the medium of television in a developing country have unique, instructional potential, but ultimately all effectual learning may be influenced by effective instructional communication and the absence of dissonance.

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