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ANALYSING DATA USING
TRANSANA SOFTWARE

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INTRODUCTION

The general principles of Computer Assisted Qualitative Data Analysis (CAQDAS) are concerned with taking a qualitative approach to qualitative data (Lewins and Silver, 2006). A qualitative approach is one where there is a need to interpret data through the identification and possibly among others; coding of themes, concepts, processes, and contexts, in order to build explanations or theories or to test or enlarge a theory. For that reason the researcher in this study had identified Schellens and Valcke (2005) hierarchical structure typology to perform the data analysis to represent higher levels of knowledge construction. Transana was used by the researcher to anaylse data in relation to the study.

EVALUATION OF CODING CRITERIA FOR COGNITIVE AND COLLABORATIVE ACTIVITY

This pilot study used the qualitative analytical typology model of Schellens and Valcke (2005) to categorize subjects' interaction. The model combines Gunawardena et al. (1997) with Veerman and Veldhuis-Diermanse (2001) which are based on social-constructivist

principles. The combination presents a clear relationship between types of collaborative activities and knowledge construction. They distinguish between task-oriented and not-task-oriented behaviour. This distinction helps to identify explicit interpersonal monitoring activities in the output and to check the balance between not-task-oriented and task-oriented communication (Schellens and Valcke, 2005).

Schellens and Valcke (2005) added a hierarchical structure to the typology of task related communication. The consecutives types used in the structure of communication represent higher levels of knowledge construction. The adoption of two different typologies to analyze cognitive processing in the discussion groups presents some advantages. First, the hypothesis testing about the impact of face-to-face in CSCL setting can be based on 2 different data sets. Second, since the two typologies are clearly interrelated, the results of the analysis are helpful to validate the individual typologies. Fig. 2 shows the relationship between both typologies. Each unit of analysis was coded according to the analysis model. In this study, Transana software was used to assist with the coding and categorizing of data.
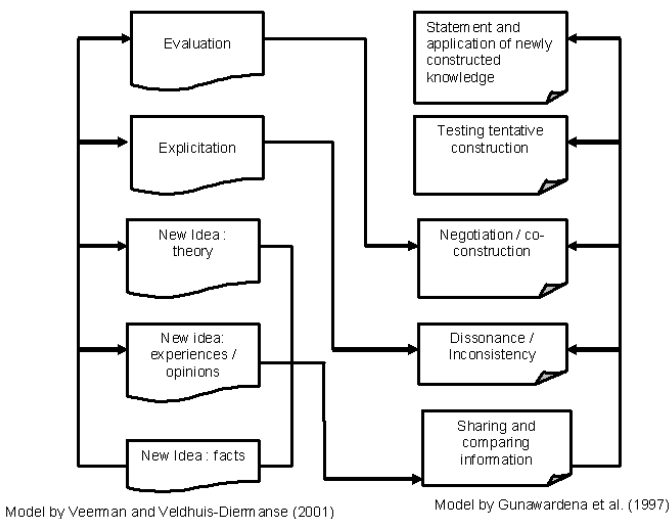

Model by Veerman and Veldhuis-Diermanse (2001)   Model by Gunawardena et al. (1997)

Fig. 2. Schellens and Valcke (2005)
Hierarchical structure in CSCL-Communication

Data based on the integration of face-to-face discussion through networked environment was investigated using the model. ESL teacher trainees discussed in pairs a lesson plan using a local area networked classroom setting (via computer terminal). Since the learning that occurred in CSCL environments was heavily dependent on verbal interaction, it should be important to identify potential operative factors in the communication activity of knowledge construction process. To this end, the exploration and explanation on events that involved learners' cognitive participation was emphasised. In order to see this, verbal elements representing cognitive and collaborative activities were identified in the content of the pair communications.

TRANSANA SOFTWARE TOOLS

The researcher considers Transana as an appropriate CAQDAS to be applied in this study. Its friendly features as well as practicality in monitoring of audio/video and facilitating transcription have really grabbed the researcher's attention to use it as a tool for data analysis. This application suited the needs of the researcher on exploring the verbal interaction of his subjects. Data analysed using the software showed some potential towards providing significant pedagogical impact on technology supported microteaching practices.

Transana is designed to facilitate the transcription and qualitative analysis of video and audio data. It provides a way to view video, create a transcript, and link places in the transcript to frames in the video. It provides tools for identifying and organising analytically interesting portions of videos, as well as for attaching keywords to those video clips. It provides a mechanism for searching for portions

of analytically interesting video by keyword and by combinations of keywords. It also features database and file manipulation tools that facilitate the organisation and storage of large collections of digitized video.

David K. Woods ed. from the Wisconsin Center for Education Research, at the University of Wisconsin-Madison developed the software and his work is supported by the University and the National Science Foundation. There is an optional registration function if researchers download the software from the website at www.transana. com. It gives details of technical support and current developments. This has really helped the researcher in obtaining relevant and important information when carrying out this study.

TRANSANA APPLICATION IN THE FEASIBILITY STUDY

Prior to coding, the transcripts was extracted or collected from Transana software located in the specific folder in the media server (Dglabam). At the same time, the journal entries could also be extracted from students' folders. As such, the data was accessible online over local area network (LAN).

Transana starts with a database window. Once created, the researcher should be able to identify that there are 3 main components: the application itself, the audio/video files being worked with and the database which contains the transcripts, clips, keywords, collections etc. The database is therefore "*the project*". In this case, the researcher named the project as Feasibility_Study. The audio/video files are therefore external to the program; it does not matter where the files are stored due to compatibility of Transana with other programs. Audio/video files are not altered in any way during the analytic process.
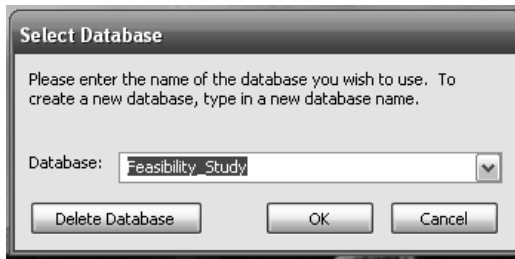
Fig 1: The Transana Select Database interface screen
from the feasible study

The Transana user interface as shown in fig. 2 comprised of 5 elements: the menu bar (which addresses the main program controls); the Video/audio player window (exhibiting the video to be analyzed); the Visualization window (displaying the waveform of the video); the Transcript window (providing tools for transcribing the audio/video); and the Data window (providing an overview of the way you have structured the data (database tree).
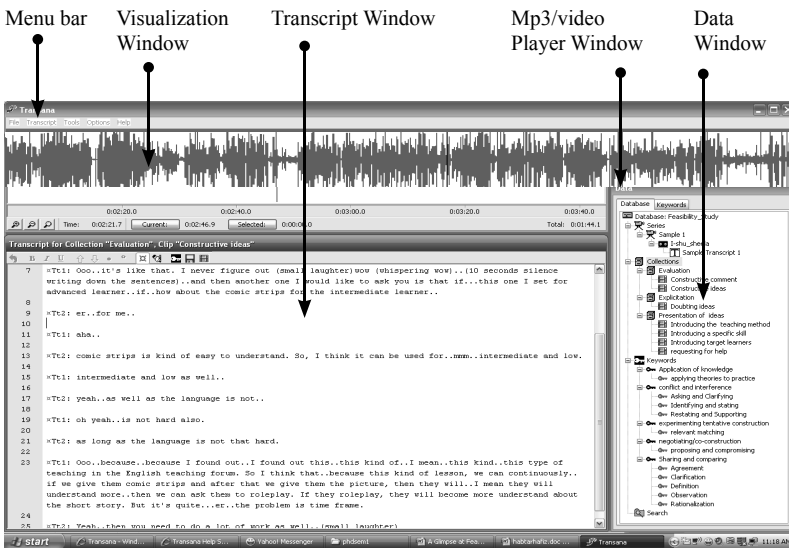

Fig. 2: The Transana screen from the feasible study

The researcher identified the analytically interesting interactions in Transana from the Clip – a portion of an Episode (a video or audio file) – which can be grouped into (thematic) collections. Any clip can belong to any number of collections. Clips are independent segments of episodes thus making it possible to work exclusively at the level of collections and clips. In creating the clips, the researcher just dragged and dropped particular portions of the transcription into collections in the data window (database tree).

Audio/Video Data types and format used in Transana
For this study, the researcher saved MP3 recorded audio of interaction in a specific folder for easy retrieval through Transana software. Apart from that format, Transana can also handle MPEG-1, MPEG-2 (which are the recommended video formats), most AVI video, and WAV audio. It includes database and file manipulation tools which facilitate the organization and storage of large collections of digitised video/audio.

Transcribing & Synchronizing Audio/Video in Transana.
Researcher made use of the Transcription Mode to facilitate the process of creating written transcripts for video or sound data and at the same time made use of the auto-rewind function and play-back speed to alter and to suit the researcher's transcription requirements.

WAVEFORM IN THE VISUALISATION WINDOW AND TIME CODING FOR EASY PLAYBACK

The waveform is the visual representation of the intensity of the source data sound. It appears automatically once the researcher created an Episode. After finish creating the written transcript of an episode, the process of inserting time codes enables a particular point in the transcript to be linked to a frame in the corresponding video or audio file – subsequently allowing synchronised playback of video, sound and transcript. The researcher can synchronise the playback based

on turn-taking in the conversation. This allows working with audio/video, waveform and written transcript simultaneously. The position of Time Codes is user-defined and could be inserted manually (which can be done at any point).

SIMULTANEOUS ANALYSIS OF DATA

The synchronisation of audio/video, waveform and written transcript allows the researcher to work closely with all three forms of data simultaneously throughout the interactive analytic process. This interactivity between the transcript, video and waveform has really helped the researcher to control the video playback from any of the three windows: clicking on a particular point in one window took the researcher to the corresponding point in all 3 windows, enabling precise pinpointing of aspects of data. Apart from that, the windows which are resizable enable greater focus on transcript/video/audio/database tree depending on what is required at a particular point of the analytic process. The researcher also took the advantage of having the split audio/video into collections and clips to view clips individually or collectively, or to view the clip in its Episode context.

FACILITATING THE CODING SCHEMA – CODING STRUCTURES AND ORGANIZATION

Making use of the evaluation model of Schellens and Valcke (2005), the researcher created Keyword Groups and organized them into Collections. The Clips were assigned (multiple) Keywords, which are grouped into Keyword Groups. The process and functionality of Keywords in Transana are essential in coding and categorizing the interaction. This could be monitored from the keyword database tree which is hierarchical. The keywords could only be created within an already existent Keyword Group. Keyword Groups can only have one

Call for Teachers

level of sub-hierarchy (although a Keyword can belong to multiple Keyword Groups).

EASE OF MANAGEMENT IN THE CODING PROCESS

Upon completing the transcription, clips were created by dragging and dropping texts into the Collection drawer located in data window. A segment of audio/video/transcript could only be assigned a Keyword once it has been created as a clip. Keywords could be inserted and added through properties toolbar. In this way, keywords can be applied to whole episodes, collections or individual clips. Similarly, a clip can be assigned multiple Keywords, and appear in multiple collections

BASIC RETRIEVALS OF (CODED) DATA

In order to retrieve the coded data, the researcher needs to retrieve clips: either individually, by the Collection within which they are located, or by using the Search tool to find clips (regardless of collection) to which Keyword(s) have been applied. The first two ways are independent of the way the data has been "coded" (application of keywords). Retrieval by Collection is considered as a very quick and easy way to view all clips which have been grouped together sequentially. Figure 3 shows the interface of data retrievals.

Figure 3: Interface of Data Retrievals

The researcher is able to obtain summary reports through the Collection tree. The report contains the written content of all the clips belonging to a Collection. It is very easy to access, providing an overview of which Keywords have been applied to the clip currently in the transcription window. This view also allows the researcher to edit or delete keywords from a clip or episode. In addition, Keyword Usage Reports could also be executed on Series, Episodes and Collections, giving an overview of the occurrence of Clips (including time code) and the keywords which are assigned to them.

Another way to retrieve the data is to search for instances of keywords applied to Episodes or Clips based on the Boolean operators (AND, OR, NOT). The audio/video clips to which they have been applied could be reviewed and the results converted into collections. As such, video clips could be combined and recombined into new collections based on the results of keyword searches.

Apart from the basic Boolean search operators, the researcher used the Keyword Map which visually represents the sequential

location of keywords as they have been applied to Clips within Episodes. At this point, Clips are colour coded in this view.
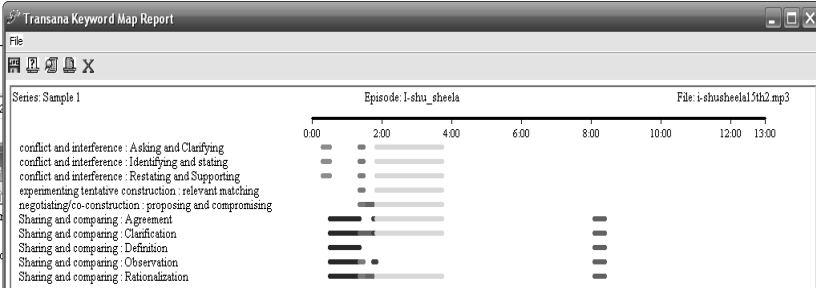

Figure 4: The Transana Keyword Map from the feasible study

ORGANISATION OF DATA

Data in the form of audio/video files and their associated transcripts are organised into Series and Episodes by the researcher. In this particular structure, a Series may have multiple Episodes (which are likely to be separate audio/video files). These were handled at the Keyword level, and could be assigned to Series, Episodes and Clips – either upon their creation or subsequently as depicted in Figure 5.
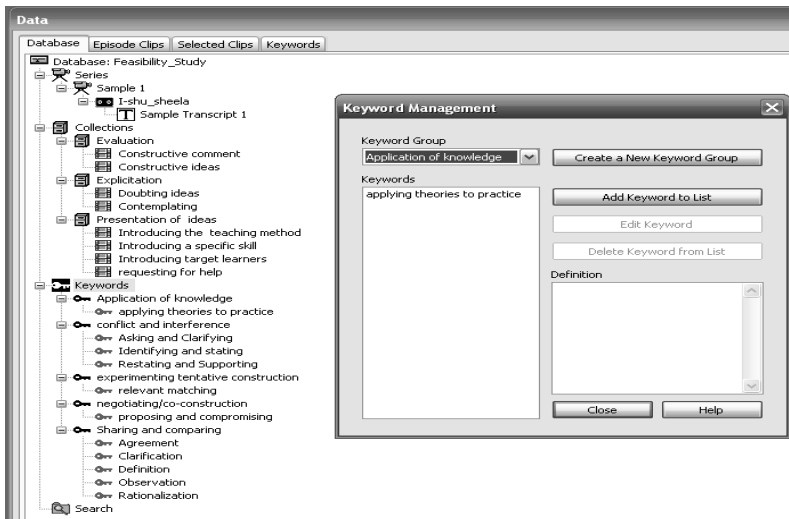
Figure 5: Interface of Transana Database Tree Keywords

WRITING TOOLS

The researcher has used Transana integrated writing tools in "Notes" which can be attached to Series, Episodes, Transcripts, Collections and Clips. This helped in creating important comments or memos as reflections by the researcher that emerged from the interaction.

PRESENTATION MODES

One particular feature that the researcher found out is that individual Clips, Collections or the results of searches can be played back and reviewed within the software only. However, for demonstrational purposes, different Presentation Modes are available to choose from the menu bar. The modes vary in size relatively of the four windows (the video window, the transcript window, the data window, and

the sound window). In other words, the software provides different options as to how video is presented during play-back. These include 'Video only', which displays the video window in full screen and 'Video and Transcript only' which displays the video and scrolling highlighting of synchronised transcript (if auto word-tracking is enabled).

CONCLUSION

The benefits and limitations of using Transana do affect the process of this feasibility study. These actually substantiate Lewins and Silver (2006) in their investigation of Transana software:

- It is very easy to use tool for facilitating the transcription of video data or audio files. The ability to synchronise playback of video, sound and transcript and to control playback from any view (e.g. by selection in the waveform of particularly loud or soft periods) is very slick and analytically helpful.
- Interactivity varies in other respects, for example it is sometimes necessary to close one dialogue box before options in the main interface are available again, whereas in other instances there is good access from one dialogue box to a related tool.
- The limited range of integrated writing tools provided by Transana is probably its greatest weakness; in the sense that it is not possible to link a particular note to multiple clips, for example, or to pull out all notes, wherever they are located in the database.
- The structure of the database tree system is a little confusing at the outset as the organisation of Clips into Collections can play a very similar function as the organisation of keywords into Keyword Groups. In addition, each clip, collection, keyword group etc can have its own ID – so the researcher

need to be clear about the difference in the way of using IDs and groups of other objects (collections, keywords etc.) in order not to become confused.

- This developer is very responsive to the feedback and needs of Transana users. The website provides access to the development team's log where they post the latest information concerning new features and versions. In addition, the open source nature of Transana means that not only is the software freely distributed, but the source code (and relevant documentation) can be obtained by anyone. Therefore Transana can potentially be customised to suit the particular needs of a given project.

In short, based on the researcher's experience experimenting with the tool, using Transana is an easy and useful way to assist the researcher in transcribing and analysing audio/video data. Certainly with more exposure to the feature of Transana and at the same time participating in a very responsive Transana community on the website, the researcher should be able to ensure that this tool could positively affect analysis process of the actual study.

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