

Applying Transactional Analysis (TA) and Ego-states for HCI Design in e-Learning: A Case Study of Indian Scripts Typing Tutor

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Abstract

Transactional Analysis (TA) of teaching and learning process reveals actions and reactions triggered from the ego-states of the teacher and the student. The teacher has to switch between these ego-states depending upon the ego-state of the student to achieve effective communication and learning results. Ego-states of teacher and students are worth considering even in the context of e-learning as the e-learning software attempts to emulate the teacher's behavior. This paper presents some of the models of TA of teacher-student interactions. The case study of Indian Scripts Typing Tutor (ISTT) software is presented to prove this possibility. ISTT is designed to address the ego-states of school children and adult learners.

Keywords

Transactional Analysis, Ego-states, Human Computer Interaction (HCI), User Interface, Instruction Design

1. Introduction

Most e-learning technologies have proven their capabilities of presenting the learning material in an interactive and multimedia format. But the contention of how much a learner has really learnt from these e-learning technologies continues to bother us even today. What has been terribly missing in the e-learning is the teacher and the teacher like behavior of the e-learning system. The experts are struggling to identify the parameters for adaptive e-learning so that the learning material can be made configurable for various types of learners. These parameters can include age, sex, ego-state, social and cultural background, education, technical skills, cognitive abilities, and several known and unknown human dimensions. It is a very

complex task. We have experimented with Transactional Analysis (TA) and ego-states [1] of learners during the design and development of Indian Scripts Typing Tutor (ISTT) software. The observations of this experiment are discussed in this paper.

The ISTT software is developed by C-DAC's National Multimedia Resource Centre, Pune. It is designed for school children as well as adult learners. It provides training to develop typing skills in Indian scripts. Large percentage of computer users in India are inhibited to use the Inscript keyboard which is specially designed for typing in Indian scripts. The prime reason behind this is the strong and unlearnable impact of English keyboard. As a result, most computer users have a difficulty in switching over to the Inscript keyboard. Therefore our challenge in designing the ISTT is to overcome the inhibitions or hesitation of computer users in typing Indian scripts. This project has two types of design activities-

- learning content
- interaction and interface

We are concentrating more on interaction and interface design issues in this paper.

2. Transactional Analysis (TA)

The TA of interactions between the teacher and student reveal unique behavioral patterns. We will be trying model these behavioral patterns in this section. We have presented these interactions with triangular relationships between the teacher (proposed e-learning system), learner, and others (other comparable learners and the rest of the world). The behavioral OK corral [3] is used for illustrating the scenarios. These are discussed hereafter.

2.1 Blame/accuse the Learner

Figure 2.1 shows the model of blaming/accusing behavior, wherein the computer software assumes that it is always correct and the user makes mistakes. Thus it forces the user to comply with its processes. This temperament of computer software is expressed through the dialogs that are flashed before us. TA of this arrogant behavior has not been analyzed enough and therefore the software developers are depending on marketing

captions which highlight the **USER FRIENDLYNESS** in capital and bold letters. Alan Cooper [2] has emphasized the need of designing polite software. Without the TA it is not possible to model the so-called friendliness or politeness. The model of friendly behavior is illustrated in figure 2.5.

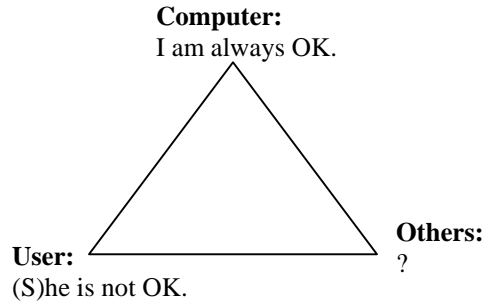


Figure 2.1 Blaming/accusing Behavior

2.2. Guiding Behavior

Most e-learning systems continue to follow the legacy of assuming that the learner is never OK. If the learners are blamed for making mistakes, they are not likely to participate very well in the learning session. It puts them off.

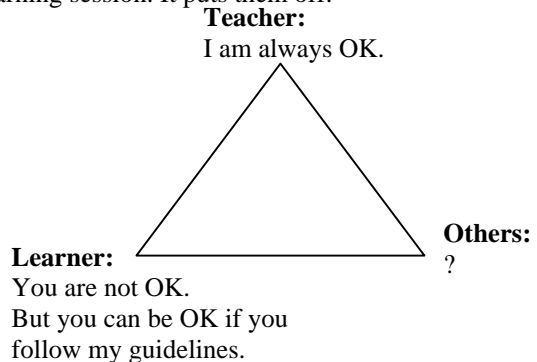


Figure 2.2 Guiding Behavior

Figure 2.2 shows that the model of guiding behavior of the teacher to the students. While dealing with young students, the teacher has to be direct while pointing out their mistakes. Therefore, the e-learning systems should point out the mistakes while providing some tips to overcome them.

2.3. Idolizing Behavior

The e-learning systems never try to idolize like a teacher does. The teacher idolizes by mentioning the names of other students who are better, while identifying the weaknesses

of a particular student. Such idolizing is intended to inspire and motivate the students to work harder. Figure 2.3 shows the model of idolizing behavior of the teacher. E-learning systems can adopt this type of behavior for motivating the young students.

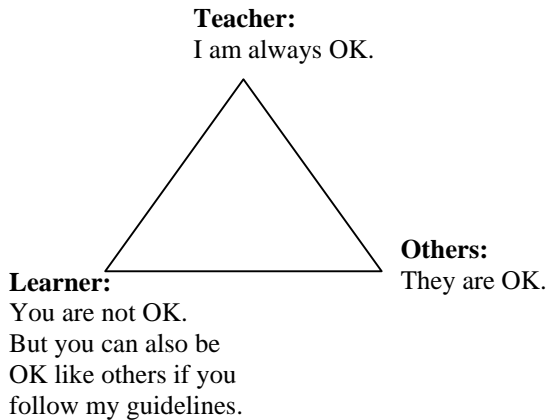


Figure 2.3 Idolizing Behavior

Such idolizing behavior wherein you compare one person with the other is often not liked by the adult learners. Therefore it may be avoided while teaching to adults.

2.4 Scaring Behavior

This type of behavior is used to scare the learner by highlighting the bad effects. By presenting scaring visions, the teacher tries to drive the learners to do the right things.

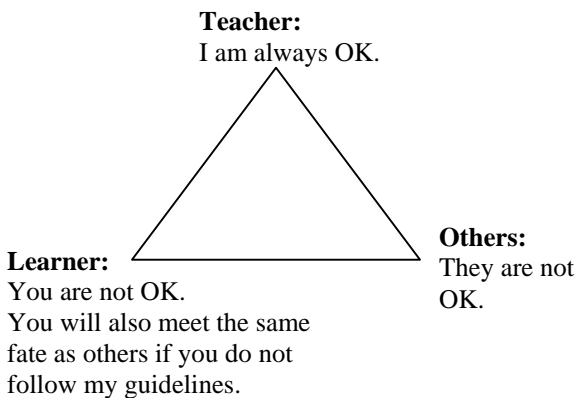


Figure 2.4 Scaring Behavior

2.5 Polite/friendly Behavior

The teacher adopts polite behavior while dealing with adult learners. Indirect approach to pointing out the mistakes of

adult learners helps in maintaining cordial relationship.

The TA has revealed 5 types of behavioral models, out of which the blaming or accusing behavior is not worth emulating, as it breaks the communication with learners. The guiding, idolizing, scaring and polite/friendly behaviors are worth adopting in the design of e-learning systems.

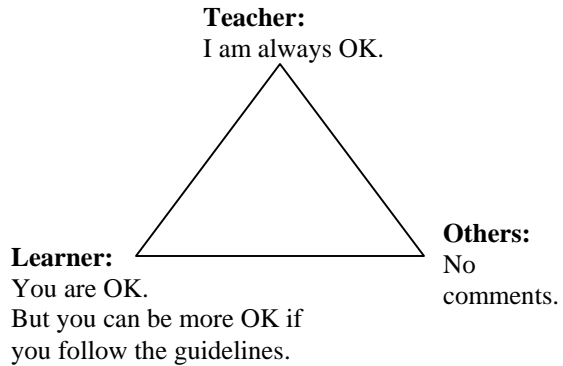


Figure 2.5 Polite/friendly Behavior

3. Ego-states

Transactional Analysis (TA) of teaching and learning process reveals actions and reactions triggered from the ego-states of the teacher and the student. The actions and reactions differ depending upon the ego-states of participants. Eric Berne identified Parent, Adult and Child ego-states among people. The teacher has to switch between these ego-states depending upon the ego-state of the student for effective communication and learning. The e-learning designers have so far not considered this dimension while designing the user interfaces for e-learning systems. Communication between similar or complementing ego-states is usually very effective. Otherwise there is a possibility of clashing ego-states that cause resistance in the learner. The psychologists usually study ego-states in the context of counseling therapy. Ego-states of teacher and students are worth considering even in the context of e-learning as the e-learning software attempts to emulate the teacher's behavior.

We have provided two different user interfaces to address the child and adult ego-states in the same version of ISTT

software. Two sets of user interfaces are designed with different metaphors and dialogs, which are tuned to appeal the school children and adult users respectively.

3.1 Changing Factors due to TA and Ego-states

Table 3.1 Changing Factors of ISTT due to TA and Ego-states		
Changing Factors	Adults	Children
Discipline	Flexible	Restrictions
Accountability	Less	More
Metaphor	Office cabin	Classroom
Color scheme	Conservative	Very colorful
Size of icons	Subdued, small	Loud and large
Dialogs	Polite, Guiding	Authoritative, Guiding, scaring, Idolizing
Shapes of dialog pop ups	Rectangle, standard font	Semantically meaningful shapes, meaningful use of colors
Learning content	Serious, highly informative	Fun, simple and yet informative

Examples of changing factors of ISTT are presented below.

3.1.1 Discipline

The ISTT asks the adult learner whether (s)he would like to see the errors for improving the typing performance. On receiving their consent it presents the errors before them. Whereas, it directly presents the errors to children with an assertive instruction to improve the typing performance.

3.1.2 Accountability

ISTT insists on regularity in typing practice to children. But it does not insist the same to the adult users. The software maintains the attendance record of students.

3.1.3 Interface Metaphor

As shown in figures 3.1 and 3.2 two different interface metaphors are selected to address the ego-states of school children and adult learners. Most evidently one can notice that the drawing area is represented as a slate for children and executive diary for adult learners. Also the schoolbag for saving the calligraphy files is replaced by a folder for

adult learners. The demo area is like a blackboard in case of children but for adults it is like a handheld device.

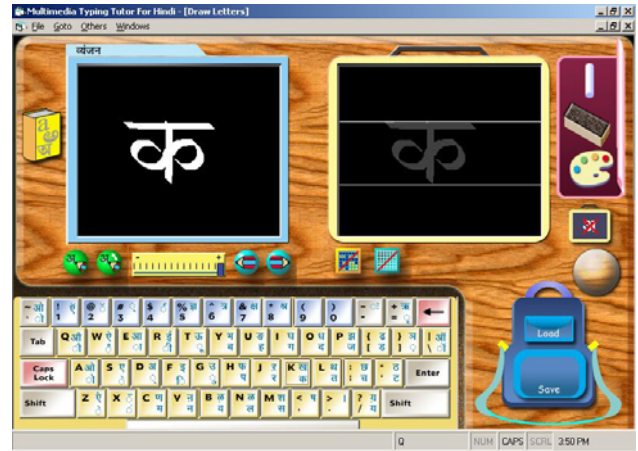


Figure 3.1 Classroom Metaphor for School Children



Figure 3.2 Office Cabin Metaphor for Adult Learners

3.1.4 Interface Color Schemes

Figures 3.1 and 3.2 show the distinct difference in the choice of color schemes for school children and adult learners.

3.1.5 Size of Icons

The icons are large and almost like real objects in case of classroom metaphor. Whereas, icons are very small in case of office cabin metaphor.

3.1.6 Dialogs

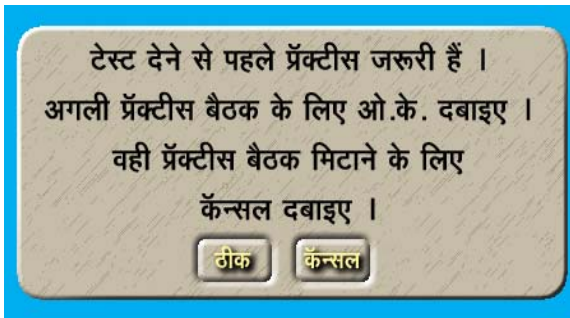


Figure 3.3 Dialog Box for Adult Learners



Figure 3.4 Dialog Box for School Children

Dialog box given in figure 3.3 is very formal in terms of its shape and the instructions are quite passive. But the dialog box given in figure 3.4 has an interesting shape and it points out the mistake very directly to the school children. Above examples use the TA models shown in figures 2.5 and 2.3 respectively.

3.1.7 Learning Content

The sample texts chosen for typing lessons are different for both types of learners. The existing vocabulary of school children and adult learners is considered while presenting the complex, medium and simple words for typing practice. Stories and interesting poems are provided for the typing practice of children, whereas, the adult learners are provided with news reports, essays, etc.

The learning instruction is being designed with full understanding of the cognitive abilities and the taste of users in terms of complexity of lessons, typing tips and guidance, and playful games. Evaluation of performance, certification, licensing scheme,

network usage are the other aspects of this product that are being developed.

4. Conclusion

The Transactional Analysis (TA) of behavioral patterns between the teacher and learner are useful in defining the behavior of e-learning systems. The study of ego-states of targeted learners is helpful in selection of suitable interface metaphors, color schemes and dialogs. The study of TA and ego-states together provide new insights, which are helpful in designing the interaction, user interface and the overall emotional quality of user experience.

5. Future Scope

Presently the development of ISTT software is on its way of completion. After its completion the usability tests will be conducted to evaluate the impact of proposed TA models and ego-states. However, the usability tests conducted with the user interface prototypes have shown encouraging results. We also propose to incorporate culture specific variations in the design of user interface.

References

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