Error-specific and individualized feedback in a Web-based language tutoring system: Do they read it? – Trude Heift

INTRODUCTION:
- immediate and individualized learner feedback is one of the major advantages of CALL
- sophisticated error analyses is needed to provide an individualized and meaningful second language practice environment
- Garrett 4 main types of error analyses
  - “wrong, try again”, to elaborate analysis require Natural Language Processing (NLP)
  - in NLP application, a parser analyses a sentence according to the lexical items and rules provided in the target language grammar
  - errors are explained in a pedagogical and individualized way

PAST RESEARCHES:
- NLP-based intelligent feedback which explains the source of an error is more effective than traditional feedback with learners of Japanese

Nagata and Swisher (1995)
- computer can raise grammatical awareness by giving metalinguistic feedback to students

Carroll and Swain (1993)
- metalinguistic feedback is more helpful to adult second language learners

Brandl (1995)
- stronger vs. weaker students’ preferences for error feedback options and responses and study results indicate that the learner’s language still influence their preference for a particular type of feedback in CALL program

Pujola
- delayed 2 step feedback that allow students to discover the source of errors themselves before the program provides the information is perceived as ideal in his reading program ImPRESSion

Van der Linden (1993)
- comparing learner strategies in CALL program with different levels of feedback found:
students didn’t try to connect themselves when no feedback about the type of error was provided.

Programs with metalinguistic feedback that are too lengthy were not being read

Students report that feedback addressing more than one error at a time made correction too complex

FOCUS OF THIS PAPER:

- learners-computer interaction during the error correction process helps assist the design of CALL program
- examining learners’ response to metalinguistic feedback from an Intelligent Language Tutoring System (ILTS) and their strategies for correcting errors
- determine if and how students use metalinguistic feedback and which learner strategies they apply in response
- Three focus questions:
  - Do students read and attend to metalinguistic feedback or overlook it?
  - What techniques do students apply in error correction in an ILTS?
  - Do learners believe the system’s analysis or in the event of an error perform an independent re-analysis?

THE GERMAN TUTOR:

- Is an ILTS that forms the grammar component of a web-based introductory course for German
- contain grammar and a parser which analyses sentences form the students and detects grammatical and other errors
- feedback modules of system correlate the detail output of the parser with an error-specific feedback message
- choices of exercise:
  - drag and drop
  - dictation
  - form sentences
  - vocabulary exercise
- entire interface is in German so as not to restrict the web-based system to a particular native language user group
  - so student will become familiar with the target language terminology
- In a sentence building exercise, students can
  - Input their answers
  - Correct errors and resubmit (by pressing check)
- Peek at the correct answer
- Go to the next exercise (by pressing skip)
- With multiple errors, the system will prioritize the errors and display one message at a time
  - Won’t overwhelm the students with excessive error reports
- Feedback is individualized through an adaptive Student Model which monitors a user’s performance overtime across different grammatical constructs
  - Strength and weakness of learners are used to tailor feedback messages to learners’ expertise within a framework of guided discovery learning
    - Beginners will receive the most explicit feedback, less technical terminology
    - Experts will receive hint at the error; and the terminology will be more difficult than of beginners’

PROCEDURE:
- Spring semester 2000
- 33 students in 2 introductory German class
- 3 one hour session doing the “Build a Sentence” exercise
- Data collection:
  - Implemented a computer log to collect detail information on the student-computer interaction
  - Participants chose an anonymous ID which they use consistently through the 3 sessions
  - Linguistic structures had been practiced in class activities prior to the computer session, so the students were familiar with the grammatical terms used in the system feedback

RESULTS:
- table 1,2, 3 on page 103 & 104

SUBMISSION TYPE:
- 33 participants submitted a total of 2795 exercise during the 3 one hour sessions
- many exercise require additional submission before a correct answers was attain, so total of 4405 sentences were submitted
- an average of 1.75 submission is required for students to obtain the correct answers
- 5 different modes of student reaction to feedback:
  - Students corrected the error(s) explained by the system
  - Students corrected an error not explained by the system
  - Students changed a correct structure
  - Students resubmitted the same answers
- Students requested the correct answer(s)

1) The student corrected the error(s) by the system:
   - The system feedback explained the error and students make corrections according to the feedback.
   - 33 participants correct at one time or another.

2) The student corrected a different error:
   - The system feedback explained the error and students make corrections according to the feedback.
   - Example: The boy goed to a movies yesterday
   - Only 7 students employed to this strategy

3) The student changed a correct structure:
   - Since the system feedback is displayed in the target language. Students did not understand the system feedback or did not read the feedback carefully. They corrected different things rather than what the system tells them to correct.
   - 9 students changed the correct structure rather than the actual error

4) The student resubmitted the same sentence:
   - Students ignored the system feedback entirely. They might assume the feedback was wrong. Therefore they resubmitted the same sentence again to clarify the feedback
   - 7 student occurred in this example

5) The student requested the correct answer(s):
   - Student did not attempt any corrections to the sentence. They seek out the correct answers immediately
   - There were 3 participants who never requested the correct answers. They tend to correct every single error until they got it perfect. Sometimes they tried up to 10 iterations.

- There are 79.5% of students attended to system feedback. There are only 73.3% students on the 1st resubmission but increasingly more after each resubmission
- Among these students, this research found that high performers tend to be more confident in their own abilities than the accuracy of a computer system.
- If the computer system reports an error, these high performers tend to look up the correct answer
to resolve the conflict.
- Furthermore, these people feel that they can learn by simply reading the correct answer instead of going through the iterative correction process.
- For low performers, it maybe possible that they find it more frustrating working through the error correction process. Interestingly, though, after a few iterations, all students become more engaged in working towards the correct answer.

CONCLUSION:
- Learners’ responses to metalinguistic feedback in an ILTS for German
  - 79.5% students attended to system feedback
  - 2.2% Students corrected errors that were not explained by the system feedback
  - 17.5% of the faulty sentences
  - 6.4% requested the correct answer
  - 3 students never requested a correct answer
  - The opportunity to access the correct answer at any time, the CALL program provided a meaningful practice environment—one in which students appreciate being informed about their errors and involved in a meaningful learner-computer interaction
  - Suggest that learner control is important. The quick route to the correct answer in the program was not over-used. In fact, 3 students didn’t use it at all. Obtaining a correct answer is good to serves to moderate student frustration
  - It is interesting to know in what extent learner level influences learners’ responses to metalinguistic feedback and strategies in error correction. In this e-tutor program, it only superficially considered differences among beginner, intermediate and advanced learners, they apply to the system’s ability to modify feedback accordingly, and there are always variations among different learner levels could be expected