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# INVESTIGATING THE USE OF STUDENT-GENERATED QUESTIONS IN DISCIPLINARY READING PRACTICES IN HIGHER EDUCATION ENVIRONMENTS

**Halina Chodkiewicz**
Pope John Paul II State School of Higher Education in Biała Podlaska, Poland

**Anna Kiszczak**
Maria Curie-Sklodowska University, Lublin, Poland

***Abstract.*** *The paper sets out to explore the issue of students' strategic ability of learning from disciplinary texts in tertiary education settings. While performing reading tasks, students acquire or restructure subject-area knowledge as well as improving conceptual resources and literacy skills indispensable for their academic attainment. The so-called reciprocal reading instruction promotes the adoption of a procedure in which students are required to generate their own text-based questions, then ask and answer them in pairs. The exploratory case study reported in this paper aimed to examine the performance of advanced Polish students of English during ten reciprocal reading sessions, part of a subject-specific course. The analysis of the collected data focused on selected aspects of the students' question-generating behaviour. Additionally, the data obtained from a semi-structured interview were scrutinized in order to find out how the students evaluated their task performance. The paper finishes with a discussion of the implications of the study for the use of student-generated questions and reciprocal reading tasks in enhancing disciplinary knowledge and academic literacy skills.*
***Keywords:*** *disciplinary knowledge, reading to learn, reciprocal reading, student-generated questions*

## Introduction

One of the basic goals of contemporary education is to equip citizens of today's globalised world with the ability to read so that they are able to process both traditional and electronic (also multimodal) texts in a diversity of personal and professional, often multilingual contexts. As learners at all the educational levels, including higher education schools, work with a substantial amount of written discourse, the concept of "reading to learn" or "learning from text", which underscores the simultaneous focus on the reading process and knowledge gains has been naturally brought to the front (e.g. Kintsch, 1998; Alexander & Jetton, 2002; Chodkiewicz, 2014; Grabe & Stoller, 2019). In fact, a dual perspective has


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frequently been taken in order to comprehensively look at reading as competence development vs. reading as a basis of knowledge construction and expansion.

In academic reading situations, while working on texts representative of some domain or disciplinary knowledge areas students typically get involved in a variety of instructional activities such as oral discussions, summarization of the main points, asking and answering questions, notetaking, or writing essays, just to mention a few. A clearly emerging bond between academic reading and writing is connected with the fact that it is natural to display an outcome of reading comprehension and learning from text through written tasks. Another key feature of academic text-based work concerns reading multiple texts, which gives students an opportunity to develop a mental representation across texts so as to elaborate on and restructure their current knowledge (Alexander & Jetton, 2002; Grabe, 2004; Grabe, 2009; Shanahan, 2009; Britt, Rouet, & Durik, 2018). In order to intensify their work towards the learning goals set students behave strategically by taking deliberate actions while reading locally or globally. Undoubtedly, it is the efficiency of academic reading skills and careful monitoring of reading comprehension outcomes that contribute greatly to the learning success (Janzen, 2001; Koda, 2005; Ediger, 2006; Grabe, 2009). An array of reading to learn strategies found beneficial for the use at the academic level include, among others: reflecting on what has been learned from text, underlying/ marking the text, thinking on how to use the text in the future, notetaking, paraphrasing, summarizing or generating questions, which is the major focus of the study reported on in this paper (King, 1994; Ediger, 2006; Grabe, 2009; Chodkiewicz, 2014).

It is common educational practice worldwide that college and university students develop and implement their academic reading skills in different sociocultural contexts while processing text genres typical of specific bodies of disciplinary knowledge with view to the goals set both for their courses' and future professional tasks (Ediger, 2006; Chodkiewicz, 2014; Grabe & Stoller, 2019; Koda, 2019). The role of genre literacy and disciplinary reading is emphasized by Martin (2013) who firmly supports the view that knowledge creation in educational contexts must be a joint effect of the implementation of subject-based reading and writing practice. Such an approach also takes a proper account of language aspects expressed as an abstraction arrived at the fundamental linguistic levels of phonology/ graphology, lexicogrammar and discourse semantics compatible with particular content-based areas.

## Theoretical background of the study

Although in many academic settings it is typically teachers who feel obliged to ask students questions to check their comprehension of the text's contents,

students can also ask questions of their own either out of their initiative or as required by some types of instructional practice. King (1991) advocates that student-generated questioning be primarily perceived as a metacognitive process helpful in monitoring discourse comprehension, as well as a mechanism used to control students' learning while reading. In fact, some scholars have preferred to use the concept of strategy adopting the terms 'metacognitive strategy', 'comprehension-fostering cognitive strategy' or 'learning strategy' used in knowledge construction (Garcia, Garcia, Berben, Pichardo, & Justicia, 2014). What has been generally agreed on, however, is that self-generated questioning does not directly lead to text comprehension, but helps monitoring comprehension and fosters it. To be more precise, it is assumed that the reader's own questions stimulate such facets of the reading and learning processes as inferencing, elaboration, explanation and justification. They can also help the reader concentrate on the main ideas of the text, search the text for the information needed to combine its pieces logically, and what is more, enhance critical thinking (e.g., King, 1990, 1994; King & Rosenshine, 1993; Rosenshine, Meister, & Chapman, 1996; Graesser & Lehman, 2011).

A growing interest in students asking their own text-based questions can be, to a large extent, attributed to the conception of the so-called reciprocal reading instruction, which started to be promoted by some educators and reading experts in the 1980s (e.g. Palincsar & Brown, 1984). Student's own questioning constitutes the key component of the procedure which engages students in collaborative discussions on selected texts with the use of strategies enhancing their reading and learning outcomes. As reciprocal reading is basically implemented as a multiple strategic approach, apart from student-generated questioning, also summarizing, clarifying, and predicting are given a role to play (Palincsar & Brown, 1984; Chamot, 2009; Yang, 2010). In theoretical terms, such an approach has its roots in the premises of instructional scaffolding, proleptic teaching, social constructivism, and Vygotsky's theory of the zone of proximal development (Klingner, Vaughn, & Boardman, 2015). In order to be able to flexibly implement the particular components of the reciprocal reading approach teachers should fully understand its principles that determine the role of reader, text and task factors in particular educational settings.

The exploitation of student own text-based questions as part of the reciprocal reading approach is particularly beneficial due to the fact that students ask and answer their questions in cooperation with other students. Above all, while working on the tasks in pairs students participate in meaningful verbal interaction, that is in a dialogue with the purpose of jointly constructing the meaning of the target text (Palinscar, 1986). The collaborative nature of students' task is underscored by King (1990, 665) who characterizes reciprocal reading as "(…) self- and peer-testing which allows students to check their understanding and

remedy any comprehension problems." Other features of students' shared processing of the text content in the course of their verbal interaction entail: restating of information, explaining and self-explaining, providing justifications, hypotheses and speculations, paraphrasing of material or promoting connections of new elements of knowledge with prior knowledge (King & Rosenshine, 1993; Taboada & Guthrie, 2006; Gunn, 2008). An important pedagogical decision is to offer students some systematic training in asking text-based questions. This can be done by providing students with prompts in asking questions such as selected signal words for starting questions. Some useful generic question stems and generic questions can also be listed for students' use (King, 1994; Rosenshine, Meister, & Chapman, 1996).

## Methodology of the study: research questions, participants and materials

The main goal of the current exploratory case study, representing a type of classroom research, was to investigate the questioning behaviour of advanced EFL university students who performed reciprocal reading tasks during a subject-specific course. In particular, the study aimed to answer the following research questions:

- Were the students able to ask questions as well as provide anticipated answers relevant to the content of the texts?
- Did the students pay attention to the formal quality of the questions they asked?
- Did the students make attempts at modifying their questions due to other students' feedback?
- What types of questions did the students tend to generate in the tasks they performed?
- How did the students evaluate their task performance?

In order to examine the abovementioned issues, a one-term study was carried out. Eighteen undergraduate Polish students of the English Department at Maria Curie-Sklodowska University in Lublin completed reciprocal reading tasks based a set of ten academic texts used during regular weekly classes in EFL Didactics. The level of the students' language proficiency was estimated to fall between B2 and C1 according to the standards of the Common European Framework of Reference for Languages. The students' questioning behaviour accompanying their reading of disciplinary texts was a goal of the researchers' analysis and discussion. In order to discern some characteristics of the students' question-generating individual performance a sub-sample of the population taking part in this study consisting of three participants was selected. The three female students exhibited different levels of both the English language competence and the

knowledge of EFL Didactics, which was determined on the basis of the final scores of the exams taken by the students in Introduction to EFL Didactics and in Practical English before the beginning of the present study.

Research tools and materials used to collect the data consisted of ten extracts of chapters of EFL Didactics textbooks, a handout of a taxonomy of questions, ten questioning cards, the transcripts of recordings of the participants' collaboration in pairs, and the transcripts of recordings of the post-study semi-structured interview. The topics covered the issues of teaching the skills of reading, listening, speaking and writing as well as of the use of stories, games, songs, rhymes and chants in foreign language classrooms. The average length of a reading passage was 400 words whereas the average level of language difficulty of the texts was estimated to be 13.3 according to Coh-Metrix L2 Readability Index.

There were two reasons why a taxonomy of questions was designed for the purpose of the current study on the basis of a selection of classifications of questions offered in recent literature (Graesser & Person, 1994; Taboada & Guthrie, 2006; Taboada, Bianco, & Bowerman, 2012). First, it constituted a point of reference for the participants performing the reciprocal questioning activities. Secondly, it was used to track the question types chosen by the students while generating their own questions. The taxonomy comprised five categories of questions, namely factual, description, explanation, pattern of relationships, and judgmental questions, which were assigned to five levels of cognitive difficulty. During each classroom questioning session the students were instructed to fill in the questioning cards. Their role was to guide the students through their reading and questioning tasks, as well as provide the researchers the data for further analysis.

## Procedure and data collection

The research study took place in the natural classroom setting as a part of the EFL Didactics course. Each of the ten reciprocal questioning sessions followed the same pattern and lasted 45 minutes. The first session contained an additional element, that is formal instruction on basic question types to be focused upon in the study. The study participants were supplied with the handout containing the taxonomy of the target questions with appropriate explanations and examples for their personal use throughout the study. They were also informed on the rationale for adopting the strategy of generating their own questions during reciprocal reading sessions. The students read individually the selected topic-oriented texts and generated three questions based on them. Subsequently, they answered each other's questions in pairs and commented on them. Having made final alterations to their own questions, they wrote them down on the questioning cards. Finally,

the teacher and the students discussed the content of the text referring to the students' questions. All the cards were collected by the teacher at the end of each of the questioning sessions and given back to the students at the beginning of the subsequent session with the teacher's written feedback on the form of the questions asked.

The three study participants were recorded two times during the study, that is during the second and the eighth reciprocal questioning sessions. This gave a possibility to collect data on the students' verbal behaviour in the process of asking and answering questions in pairs as well as to observe the actual influence of the partners' feedback on the final versions of the questions provided. A week after all the sessions had been completed the students took part in a post-study semi-structured interview in which they were asked to comment on their decisions concerning the choice of particular question types, reasons for modifying their questions, as well as on the interactive aspect of the procedure they had become familiarised with.

## Data analysis, results and discussion

All of the questions generated by the three study participants were analysed and rated by two academic teachers at two conferencing sessions. While classifying the question types used by the students, the two raters referred to the question taxonomy employed in the study as well as to the content of the texts. They had to decide whether the particular student's questions truly matched the information conveyed in the text. They also decided if the questions generated by the students and their anticipated answers were relevant from the perspective of the content of the texts and if they could be regarded as correct. Furthermore, they analysed the modifications introduced by the students in their questions.

On the basis of qualitative and quantitative analysis of the data gathered, the following results have emerged. The three study participants managed to perform the tasks successfully and provide the amount of questions required; each student asked 30 questions on 10 texts, that is 3 questions per text. As for the first research question, it was found that all of the student-generated questions were relevant to the content of the texts; the students followed the task instructions and asked questions primarily about the main ideas conveyed in the texts. They were also successful in providing relevant anticipated answers to their own questions – only 2 out of 90 answers lacked direct connection with the target texts.

As far as the second research question is concerned, the results of the analysis showed that the students generally did not have serious problems with obtaining clarity in their questioning. Overall, as much as 86.7% of their questions were rated as clearly expressed from the perspective of their addressee. Asking sufficiently clear questions posed a minor challenge for one of the students

(Student B) whose 7 out of 30 questions were found not to be clearly-stated. What caused a problem for all the three students was asking questions linguistically correct; in fact only 55.5% of them were correct in terms of their language form. The students tended to make similar kinds of errors resulting in e.g. the lack or misuse of articles and inversion, a wrong word choice or in an incorrect use of plural and singular forms of nouns and spelling rules. An interesting conclusion might be drawn, then, that the three participants of the study generally coped with asking communicatively satisfying questions which could be easily understood by the recipients, yet, they faced considerable problems with making their questions linguistically correct. The most substantial difference between the number of questions evaluated as clearly stated but not linguistically correct could be observed in the case of Student C who posed as many as 28 appropriate questions out of 30 (93.3%) while only 14 (46.7%) items were found to be linguistically correct.

*Table 1* ***Number of the students' generated questions rated as appropriate across all the texts***

| | Clearly stated questions | Linguistically correct questions |
|---|---|---|
| Student A | 27 | 19 |
| Student B | 23 | 17 |
| Student C | 28 | 14 |
| Total | 78 | 50 |

*n=30*

In order to answer the third research question, the amount of modified questions was calculated. It was revealed that the students did not make many attempts at modifying their questions even though they were encouraged by the instructor to improve the form of their questions after receiving feedback from their partners. As few as 16 instances of question modification were found. Although the above-discussed findings concerning the linguistic correctness of the student-generated questions clearly point to the need of introducing changes to their form, the students seemed not to notice such a necessity and were frequently satisfied with the primary versions of their questions. Interestingly, whereas the biggest amount of changes, that is 7, was made by Student A who committed the lowest number of mistakes in her questions, the least significant amount of modifications, that is 4, was introduced by Student C who produced as many as 16 erroneous items. A more optimistic remark that can be made on the basis of the results concerns the number of appropriate students' modifications of their questions as assessed by the raters. Indeed, as many as 13 out of 16 modified questions were formally correct. It is worth noticing, then, that when the

undergraduates managed to notice errors in their own questions or were informed on their existence by their partners, they worked on the quality of the items and succeeded in correcting them.

As for the fourth research question, the findings show that two types of questions were particularly frequently used by the students. Namely, the participants generated as many as 31 (34.4%) description questions and 23 (25.5%) explanation questions. They asked the same amount of factual information and pattern of relationships questions, that is 16 (17.7%) questions per each category. Judgmental questions constituted the least frequently exploited type of questions as there were only 4 (4.4%) students' questions classified into this category. Table 2 below presents the distribution of the question categories as used by the study participants. On the basis of these findings it can be deduced that the undergraduates were mainly interested in the information concerning the definitions, characteristics and applications of key concepts discussed in the target texts. As a matter of fact, they worked relatively closely on the texts to search for relationships between certain ideas, however, they did not reflect deeply on the concepts through asking judgmental questions.

*Table 2* ***Number of the five question categories asked by the students throughout the study***

| | Factual Information | Description | Explanation | Pattern of Relationships | Judgmental |
|---|---|---|---|---|---|
| Student A | 2 | 6 | 13 | 6 | 3 |
| Student B | 7 | 15 | 4 | 4 | 0 |
| Student C | 7 | 10 | 6 | 6 | 1 |
| Total | 16 | 31 | 23 | 16 | 4 |

While analysing the data provided in the table above, it may also be noticed that all of the three students tended to use one category of questions more frequently than others. Student A most often asked explanation questions whereas Student B and Student C asked questions referring to the description of the ideas put forward by the texts. It is worth pointing out that no significant linear changes in the students' preferences as to the use of particular question categories could be found.

The last research question concerned the participants' evaluation of their task performance. All of the three students took a positive stand as they believed that formulating questions related to the main ideas of the texts they read helped them focus on the communicatively important pieces of information and improve text comprehension. While commenting on the process of generating questions, Student A stated that she chose fragments *that were discussed the most in the text, when was the most information about them*, which helped her remember the main

ideas of the texts she was expected to work with. Student B, on the other hand, observed that performing the question-related tasks proved to be beneficial for noticing what she found important or difficult: *But when I came across some more important information or the ones that I considered more difficult, I stopped to write a question and then I moved on.*

When asked to evaluate the interactive aspect of asking and answering questions, the participants shared the view that it not only provided them with an opportunity to test their text comprehension and content knowledge gained, but also to notice information they did not pay attention to while reading the texts. Student C mentioned that she found answering the other student's questions useful as *They were usually different even though we had the same text… they also focused my attention to other parts of paragraphs I didn't choose to ask my question about.* The students admitted that the fact that they had to ask their their own questions to their partners made them be more careful in verbalizing their thoughts clearly. Student B claimed that when her partner experienced some problems with understanding her questions, it was a sign for her that her *questions weren't precise. So he was asking "What? what?" And I had to yeah....sometimes I had to change my question, to add some things to be more precise.* Such a behaviour of Student B's partner functioned as implicit feedback for her on the quality of her question. It was revealed, then, that the study participants decided to modify their questions when they were not clear enough to understand for the recipients. Another reason for introducing modifications, as reported by Student C, concerned the fact that she wanted her questions to be relevant not only to the content of the target text but also to be important for her partner with respect to their future career as a teacher. She maintained: *I would adjust the questions, make them more also relevant for teachers-to-be of English and Polish. And.... basically to help them notice what's the most important, so content. No change in language.* Interestingly, the students admitted that while modifying their questions, they took more care of the content and the clarity of the items but they rarely noticed the necessity of improving the linguistic form of the questions.

## Conclusions and implications

It has to be acknowledged that enhancing specialized literacies to be used by students across different domain areas to engage with, reflect on, and evaluate advanced knowledge requires the development of a set of text-based strategies, including self-generating questions. The questions generated by the three students in the study reported in this paper gave insight into how the students interacted with the target texts and which information they focused upon. The students' engagement in reciprocal reading and questioning tasks enabled them to better process the contents of the texts they read as well as to practise asking selected

question types. When generating their own questions the students had to put them into correct language form as well as clearly express the ideas behind them. Interactive presentation of the students' ideas and comparing their reception of the content of the target texts with that of other students gave grounds for activating their critical thinking skills.

It can be concluded that self-generated questions can constitute an important strategy in disciplinary reading, that is in learning from expository texts in academic settings. They can make students more responsive to content-area input and more responsible for their learning and initiative to participate in classroom interaction. Generating students' own questions can stimulate students' reflection on content-area knowledge worked upon and its consolidation with their prior knowledge as well as ensure a critical approach in identifying points of relevance. Also the need for taking more care of the linguistic accuracy of one' verbal expression cannot pass unnoticed. Asking questions is undoubtfully a useful strategy for training would-be language teachers preparing for the dialogic character of instructional practice.

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