

SCHEMA THEORY AND CONCEPTUAL FRAMEWORKS IN ELT MATERIAL DEVELOPMENT

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Abstract. This paper aims to focus on the usage of Schema Theory and Conceptual Frameworks in learner-centered classrooms. 21st-century skills necessitate significant changes to the teaching approach in modern language departments. Teachers have to consider Schema Theory and Conceptual Frameworks to adapt the content and materials to the requirements of the students during the learning process. Adapting and customizing materials to students' needs, expectations, culture, and interests may be a challenge for educators throughout the world. Adapting the materials or creating materials are quite difficult for new instructors. The purpose of this research was to identify if teachers have to design materials and consider Schema Theory and Conceptual Frameworks while adapting or designing materials. To achieve desired learning results, the teachers not only change the teaching materials but also take into consideration all frameworks and teaching approaches to design effective materials. The article underlines the significance of changing learning materials and modifying resources to learners' needs using Schema Theory and Conceptual Frameworks. The questionnaire was used to collect data from five universities in Georgia and various language centres or schools in Georgia and abroad. The study found that teachers needed to change the materials, and when resources are created with Schema Theory and Conceptual Frameworks in mind, the learning process is greatly impacted.

Keywords: schema theory, conceptual frameworks, ELT materials, designing materials.

Introduction

A schema theory is a fundamental principle of cognitive psychology. A schema theory helps people to arrange their information into mental models called schemas. Schemas focus on a framework that connects past experiences and a new stimulus, which helps in perceiving and absorbing new information. Schema theory was first researched by Bartlett (1932), identifying its significance while studying memory and learning.

Schema theory emphasizes the significance of prior knowledge while learning a language. Schemas are used to interpret language texts in order to perceive information. Pertinent schemas are used to activate prior knowledge. Pertinent schemas help comprehension, and they link prior knowledge to new information. Without pertinent schemas, contextualizing and comprehending information becomes difficult.

While learning and perceiving new information, students process and memorize new knowledge, and conceptual frameworks help to organize instructional materials. Conceptual frameworks use the ideas of schema theory in order to perceive information easily. As for the materials, language learning materials should take into account the schema theory for effective learning, the materials should link pre-existing schemas to new items (Grabin & Llosa, 2020).

Conceptual frameworks and schema theory are significant in English Language Teaching (ELT). ELT professionals need to create materials that focus on activating pertinent past knowledge by using schema theory, which increases the accessibility and significance of fresh language input. If the topic is well-known, the understanding of learners is better; for instance, showing them the reading materials about famous topics would lead to better perception and understanding (Yan, 2020). The students are connecting new words and materials to their preexisting schemas.

Moreover, not only are connections enabled, but more learner-centred lessons are designed while linking their pre-existing knowledge to the new concepts. Because students are more inclined to be involved in the lesson and interact with known and interesting materials, this approach of designing materials not only helps with engagement in the lesson but also creates a sense of relevance in the classroom. Cognitive resources might improve students' capacity to take in new material, resulting in increased language competence.

Additionally, learner-centered learning is easily fulfilled through schema-based learning as teachers may design individualized learning materials by activating students' prior knowledge and activating schemata. This may foster an increasing interest of students in learning in general and in this particular subject as schema-based materials speak to their needs and lifestyles, making learning more relevant. This will lead to improving the capacity to take in and remembering new material in an effective way, resulting in increased language competence (Yang, 2024).

1.1. Role of Schema Theory in ELT

Schema theory is related to cognitive science, focusing on how the brain acquires new knowledge through activating prior knowledge. Schema theory was first introduced by Kant in 1781, this theory was developed throughout the decades after that. Schema is connecting new information and pre-existing knowledge frameworks, resulting in the improvement of language acquisition processes. A schema is a unit of knowledge that is stored in the human brain. Schema theory consists of three types: language schema, content schema, and rhetorical schema (Carrell & Eisterhold, 1983).

Language schema is related to the learner's language knowledge. This prior knowledge refers to systems of the language: phonetics, lexis, and grammar, and their rules. This knowledge helps the learners to understand the written or spoken texts (Zhang, 2021). Students are enabled to understand complex texts due to strong language schema, as they can recognize sentence structures and patterns.

Content schema is related to language and cultural background knowledge (Yang, 2024). This leads to good interpretation skills as the students are enabled to understand and interpret the content of the provided written or spoken text easily if they activate the content schema, which is connected to their experience, education, culture, and knowledge of the topic. Therefore, while designing the materials, the teachers should take into consideration not only language schema but content schema as well, so the learners can easily relate to the materials.

Rhetorical schema is related to understanding the genre of given materials. This schema is corrected to text structures, genre, discourse patterns, layout, and styles (Ren, 2023). If the learners' rhetorical schema is activated, they make more predictions, and the text [written or spoken] is more manageable to understand and decipher.

According to schema theory, the learners understand the new concepts when new knowledge is incorporated into pre-existing schemas. That's why in every single lesson, pre-tasks are important as they activate schemata of the pre-existing knowledge and enable the students to think back on relevant experiences they have related to the topic. This process helps cognitive frameworks to absorb new knowledge more effectively.

1.2. Incorporating Schema Theory in ELT Materials

Considering Schema Theory while designing the ELT tasks is vital. The above-mentioned language schema, content schema, and rhetorical schema should be taken into consideration while designing the materials, so all of them are activated when students interact with the materials.

According to Hu (2024), schema-based instruction fosters not only critical thinking as the students link the new and prior knowledge but also helps language skills in terms of reading, listening, writing, and speaking as the learners are given cognitive resources.

Reading: while teaching reading, a substantial part of the lesson is activating schemata and incorporating new knowledge with the prior one (Hu, 2024). Students comprehend the text more effectively if the pre-tasks are done, activating pre-existing knowledge in pre-reading tasks. For instance, creating teaching materials by using strategies like speaking about their experiences and predicting the content based on titles, pictures, and headlines. Pre-existing knowledge activation helps deeper comprehension of the text.

Listening: pre-existing schemas are helpful while teaching listening skills, as students need to activate schemata before they attempt the listening tasks (Li & Sakulwongs, 2021). Pre-listening tasks should be linked to the topic in the listening, activating pre-existing schema using the photos, titles, etc., and some vocabulary items should be taught as well to foster their understanding in order to comprehend the spoken language more effectively.

Writing: schema theory enhances organizing structures in writing as the students are better able to arrange and express their ideas if schemas are activated. Moreover, it is easier to generate ideas and transform them into a written text if the format is provided before giving the task. For instance, arranging their essays, and organizing them (Heath, & Startup, 2020).

Speaking: Schema theory comes in handy in teaching speaking as learners link the prior knowledge and create an infinite number of sentences. Pre-speaking tasks help to activate schemas, for example, brainstorming and arranging their ideas more logically (Krashen, 1985).

2. Conceptual Frameworks and Schema Theory for Material Design

Conceptual frameworks enhance schema theory in ELT materials development. In ELT materials, conceptual frameworks play a vital role as they provide structured approaches in order to design effective materials for students in alignment with their needs. These frameworks foster the creation of effective and needs-based, contextualized resources that enhance the opportunities of activating schemas efficiently. These frameworks help the creation, organization, and implementation of effective materials that activate learners' cognitive processes.

2.1. Cognitive Load Theory (CLT)

Cognitive Load Theory (CLT) plays a huge role in materials development and ELT by providing instructional materials aligned with human cognitive architecture to improve learning processes. According to Bledsoe and Richardson (2020), CLT proposes that learners do not have an infinite amount of cognitive capacity but rather a limited one, and instructional materials using cognitive load to activate schemata will minimize the load more, narrow it down, which makes learning more effective as extra cognitive load is not used. For example, the materials should be in alignment with the level, and it should be simple to avoid overwhelming working memory, starting from simple to more complex in order that students can build and refine schemas.

2.2. Scaffolding Theory

Scaffolding Theory proposes that materials should activate schemas, but also should start from simple to more complex. All materials should be graded to the learners' level. In conceptual frameworks, scaffolding is one of the main components of fostering cognitive development. Scaffolding takes into consideration not only the learner's cognitive abilities and prior knowledge but also motivation as well. For example, using guided exercises before the independent tasks (Shabani, Khatib & Ebadi, 2010).

2.3. Constructivist Learning Theory

The Constructivist Theory focuses on critical thinking and problem-solving. Learners relate new information to prior knowledge through inquiry and discovery. It also includes reflective tasks and analyzing topics from different viewpoints (Fosnot, 2013). This theory suggests using collaborative tasks to activate collective schemas through experiences.

2.4. Input Hypothesis

Schema theory and Krashen's (1985) input ($i+1$) are connected. The input hypothesis emphasizes that while designing materials, the teacher should consider that each task should be slightly higher than the students' proficiency level but the learners should be able to do the tasks successfully by connecting the tasks to existing prior knowledge, schemas, incorporating familiar topics in the lesson (Khartite, 2021).

2.5. Sociocultural Theory (Vygotsky)

Vygotsky's Zone of Proximal Development (ZPD) is related to schema activation by considering the context where the knowledgeable ones [e.i. teachers] help students fill gaps in knowledge. In materials development, teachers encourage collaborative learning and design tasks accordingly (Peng & Tao, 2022).

2.6. Dual Coding Theory (Paivio)

Dual Coding Theory focuses on using both verbal and visual representations to strengthen schema formation and memory (Sadoski, Paivio & Goetz, 1991). In order to use this conceptual framework while designing the materials, teachers should use visuals, charts, illustrations, podcasts, videos, infographics, and multimedia tools.

2.7. Experiential Learning Theory (Kolb)

This framework suggests learning based on experience and activating schemata based on experience (Wang & Zheng, 2021). In order to use Kolb's Experiential Learning Theory in materials development, the teachers should design hands-on activities simulating real life, for instance, role-play.

2.8. Situated Learning Theory

Situated Learning Theory focuses on using authentic contexts in materials and authentic social interactions in materials. The teachers should design case studies, use authentic materials (e.g. newspapers, brochures, etc.), and create authentic social interaction, online forums, etc. in the lesson to make sure that the learners activate schemata using authentic contexts (Zhang, 2023).

2.9. Bloom's Taxonomy

Schema theory emphasizes activating prior knowledge while acquiring language, and Bloom's emphasis also focuses on from simple/ known (remembering) to more complex (creating) (Krathwohl, 2002). For instance, the students should relate to the topic first, and then they can analyse it more.

2.10. Cognitive Theory of Multimedia Learning (Mayer)

The Cognitive Theory of Multimedia Learning is related to Schema Theory as prior knowledge is activated before introducing new knowledge. Mayer's theory considers materials developers using multimedia information, for instance, texts, sounds, in two dimensions: verbal and visual (Mayer, 2021).

Methods

The research method includes:

- Literature review and analysis of the topics provided in the research.
- The questionnaire was filled out by teachers abroad and five universities in Georgia
- The questionnaire consists of a Likert Scale format in most questions; however, this questionnaire has a qualitative component, with some open-ended questions as well

Results and Discussion

The questionnaire was created in order to understand and check if materials and coursebooks were successful while teaching. The questionnaire was piloted with 10 English language teachers. The teachers completed it twice, with a 5-minute break in between. Since their responses were identical, the researcher did not calculate Cronbach's Alpha, and the test was considered reliable. In order to check and ensure content validity, teachers were asked to provide feedback on the questions, and two questions

were changed based on their feedback. The questionnaire was sent via Google Forms to various teachers through email and social media groups. Participants did not provide their names or emails to maintain anonymity. Data were collected after a month with a total of 132 participants responding to 10 questions. The questions included demographic data (nationality, gender, age, teaching experience, location) and information related to materials development and adaptations.

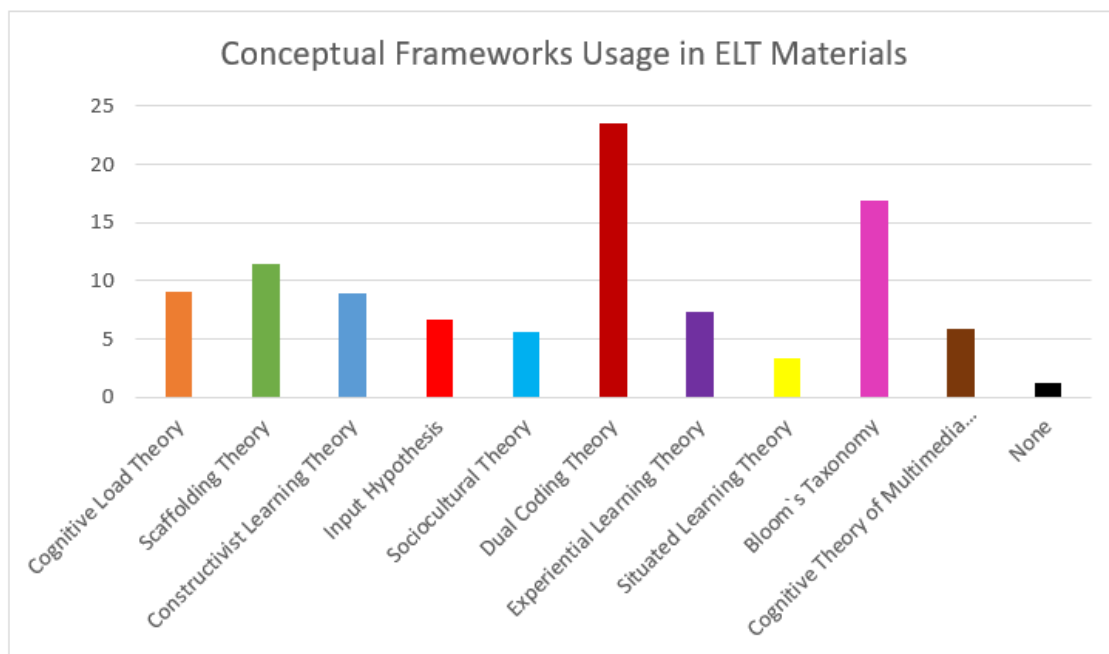
The questionnaire aimed to investigate whether schema theory was used in lessons and whether the materials were designed considering the conceptual frameworks. Demographic data (questions 1-5) revealed interesting insights about the 132 participants, 128 female and 4 male, aged between 25 and 47. A majority (87 participants) were from Georgia, while others were from different countries. 71% of participants have more than 10 years of English language teaching, minimum of 2 years of experience. As for teaching settings, 62.8% of participants taught at schools (state or private), 15.4 % at universities (state or private), and 21.8 % at language centers.

Question 6: 91.2 % of participants wrote that they use the materials that activate schemata in all lessons, focusing on skills and systems, using content schema and language schema. 5.7 % of participants stated that they start the lesson with the main aim without doing pre-activities. 3.1 % of participants were not sure what to answer, and some of them marked the option called 'other'.

Question 7: 89.4 % of participants mentioned that they change, adapt, or add materials to each lesson, for example, photos, context, etc. While the remaining 10.6% of participants said they use the coursebook and teacher's book only.

Question 8: participants mentioned that they used some theories while adapting materials: 9.1% chose Cognitive Load Theory, 12.4% - Scaffolding Theory, 9.9%-Constructivist Learning Theory, 7.7%-Input Hypothesis, 6.6% -Sociocultural Theory, 24.8% -Dual Coding Theory, 3.4%-Experiential Learning Theory, 17.9%-Bloom's Taxonomy, 5.9%-Cognitive Theory of Multimedia Learning, none of these theories were used by 2.3%. It means that while changing or adapting the materials usage of visuals, charts, illustrations, podcasts, videos, infographics, and multimedia tools is very popular (See Figure 1).

Figure 1. Conceptual Frameworks Usage in ELT Materials



Question 9: 73.6 % of participants wrote that they need to customize not only materials but assessments [quiz, mid-term, final exams] as well, and adapt some tasks and sentences accordingly, while the remaining participants mentioned that they do not customize the assessments, and they use the teacher's book for tests.

Question 10: The last question was an open question connected to changing materials in the teaching methods and using schema and conceptual frameworks. The teachers stated that they altered some

methods and used more pair work/ group work or even project work to involve the learners more and enable the students to share and micro-teach. Participants stated that coursebook materials should be modified. The teachers mentioned that while designing materials, all conceptual frameworks should be considered, and noted that it is a difficult task, especially for novice teachers, to design materials using the conceptual frameworks.

Conclusion

In conclusion, the study showed that the participants adapted the materials or designed the materials using the schema theory. Moreover, this survey showed that the teachers are willing to use the conceptual frameworks while designing the materials, but a lack of training in materials development hinders more opportunities. It can be claimed that if the teachers are retrained in how to adapt or design materials using schema theory and conceptual frameworks, it might make the teaching and learning process more effective, and it will enhance the learning process.

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