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Introduction

ESP is a growing area of EFL at tertiary level in Japan. In ESP, the appropriateness of teaching materials is a crucial factor (Canado & Esteban, 2005) of the success of curricula and learning. Theoretically, the most appropriate teaching materials should be developed by the ESP programs and/or ESP practitioners for the specific group of students based on reliable needs analysis. In reality, however, commercially available teaching materials are utilized by many ESP courses due to various factors such as limited resources and time. Some reputable textbooks are developed by professionals and expert writers in the fields and can support the teachers lacking the expertise in students' fields of study. However, teaching material is a problematic area (Gatehouse, 2001). It is even regarded as an educational failure. The cause of this failure is considered either to be the textbook itself or the ESP practitioner who chooses the textbook (Swales, 1980). Due to lack of experiences (Porcaro, 2013), some ESP teachers are likely to choose inappropriate teaching materials. The inappropriateness could be caused by the following mismatches:

- **Mismatch in proficiency level, i.e. materials are either too difficult or too easy.**
- **Mismatch in content area**
- **Mismatch in course structure and textbooks, e.g. textbooks are mostly designed for students to use in one year for local contents. They do not match skill-based syllabus.**
- **Mismatch in teacher's interests and students interests**
- **Mismatch between course goals and evaluation of students achievements**

The above-mentioned potential problems indicate why choosing appropriate materials is not only necessary but also essential especially for low level EFL students. It is equally important for ESP practitioners to adopt a flexible approach to selecting teaching materials. When mismatch happens caused by compulsory teaching materials such as textbooks, ESP practitioners must be equipped with a variety of teaching materials, e.g. reference books, online sources, real life materials in students' field of study and utilization of students choices of their own materials to study. Equipped with these choices, ESP practitioners can make a quick fix of any problems caused by inappropriate teaching materials. In addition, the benefit is that most updated content materials could be implemented. Another benefit is, in this process, students' motivation could be improved. Currently in Japan, there are many published materials, such as textbooks, ESP reference books and professional sources. However, systematic evaluation of such materials is lacking which poses difficulties to ESP practitioners when choosing ESP textbooks. This research aims to focus on ESP material analysis for two reasons. First, teaching materials are considered by previous researchers to be very important to meet students' needs in ESP (Edwards, 2000). Second, disciplinary needs and subject content are also regarded to be crucial (Hutchinson & Waters, 1987). Thirdly, the results of a systematic overview and evaluation of the bestselling textbooks for EST (English for Science and Technology) courses at tertiary level in Japan are reported.

Methods

- Systematic investigation on current, available, published or commercial EST teaching materials for EFL students at Japanese universities is conducted.
- The following aspects are used as a framework to categorize, document, analyze and evaluate the textbooks:
 - **type of syllabus**
 - **main content areas**
 - **target proficiency level**
 - **types of texts and language (e.g. authentic, simplified scientific reading)**
 - **focuses of language skills**
 - **main types of language exercises and activities for various purposes**
 - **supplementary materials**
- Textbooks are organized into two groups:
 - textbooks of basic level
 - textbooks of intermediate level
- Subsequently, the analysis of one of the main textbooks adopted by the Technical English program of UEC Tokyo is done using similar categories as mentioned above.

Results

1. Main results of basic level

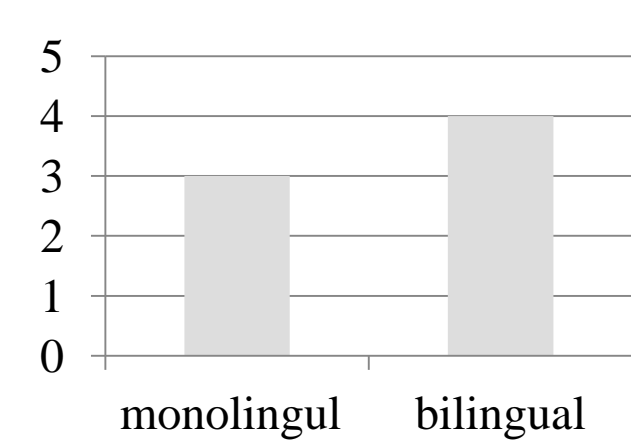


Fig 1. Medium of Instruction

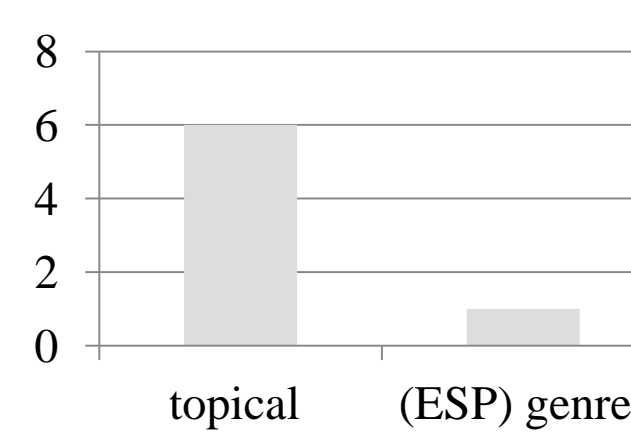


Fig 2. Types of Syllabi

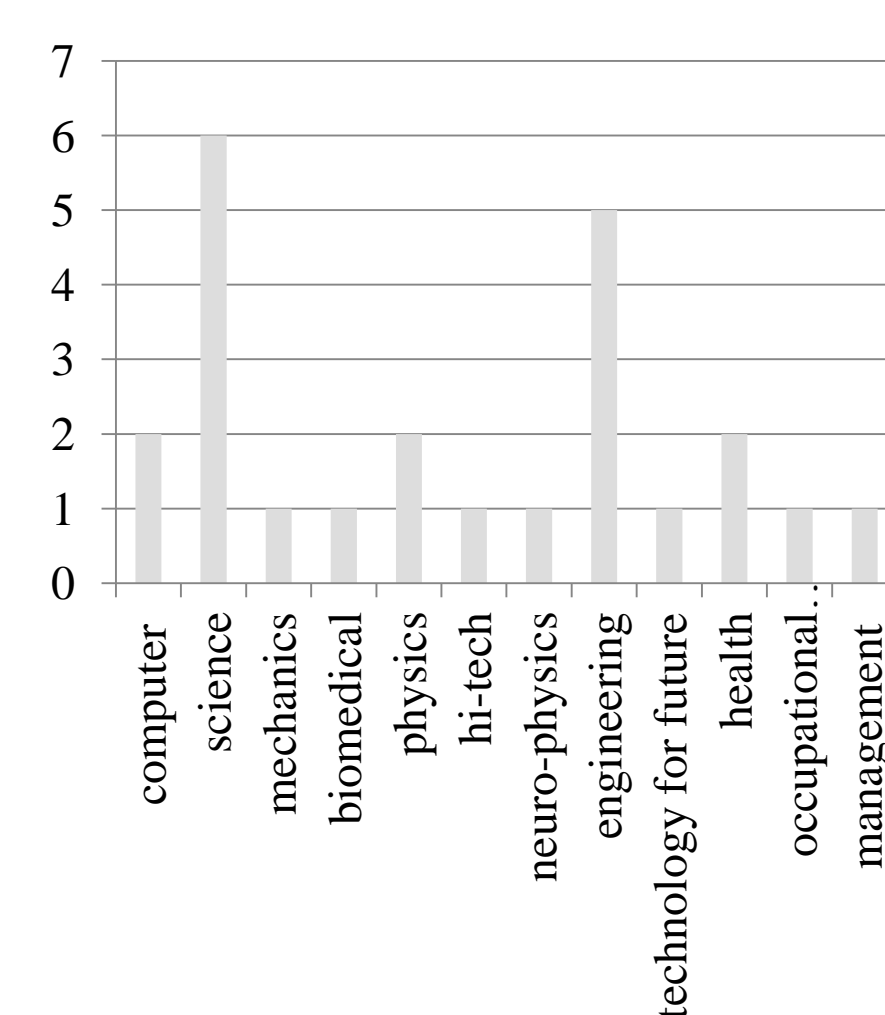


Fig 3. Main Content Areas

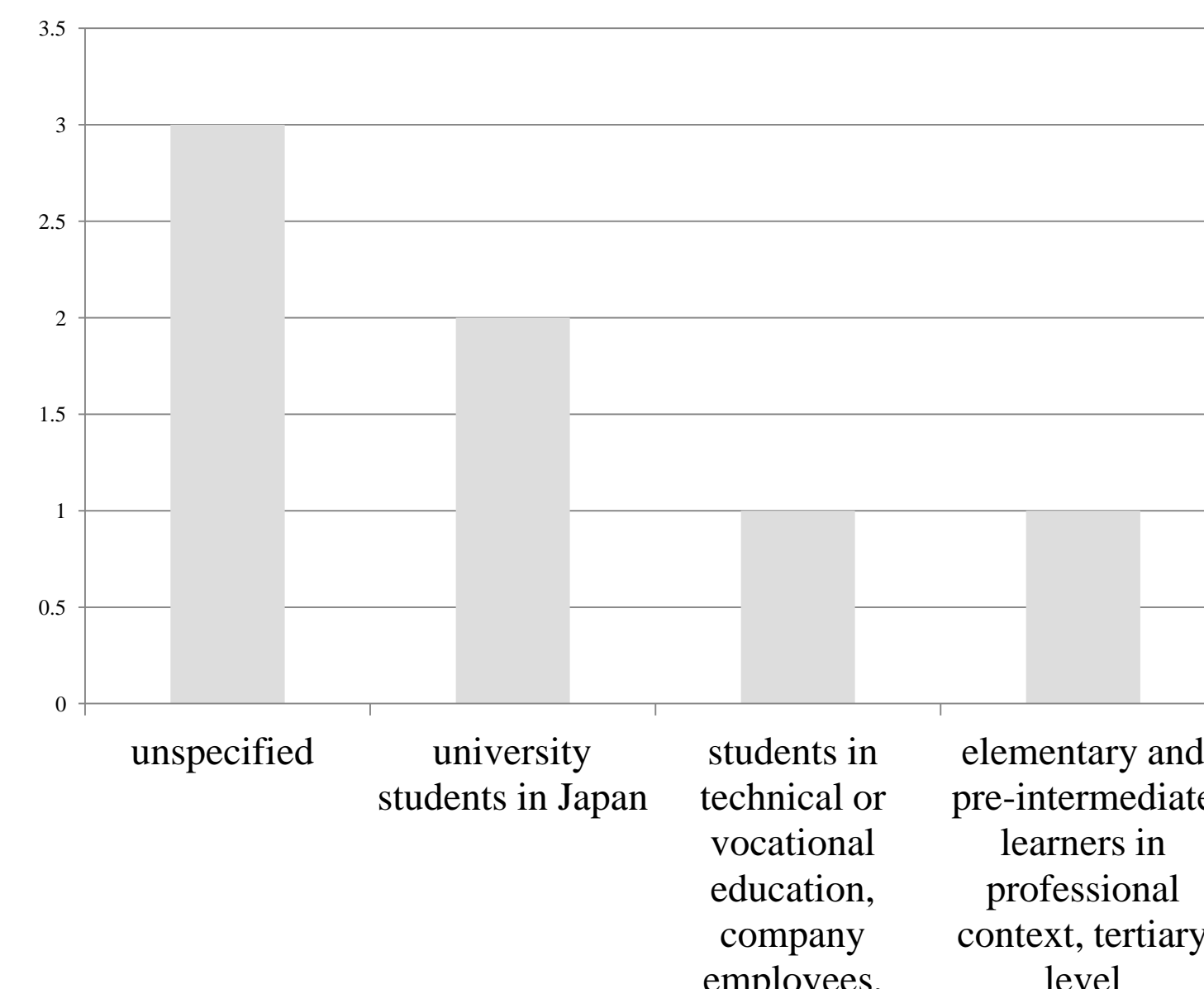


Fig 4. Target Level

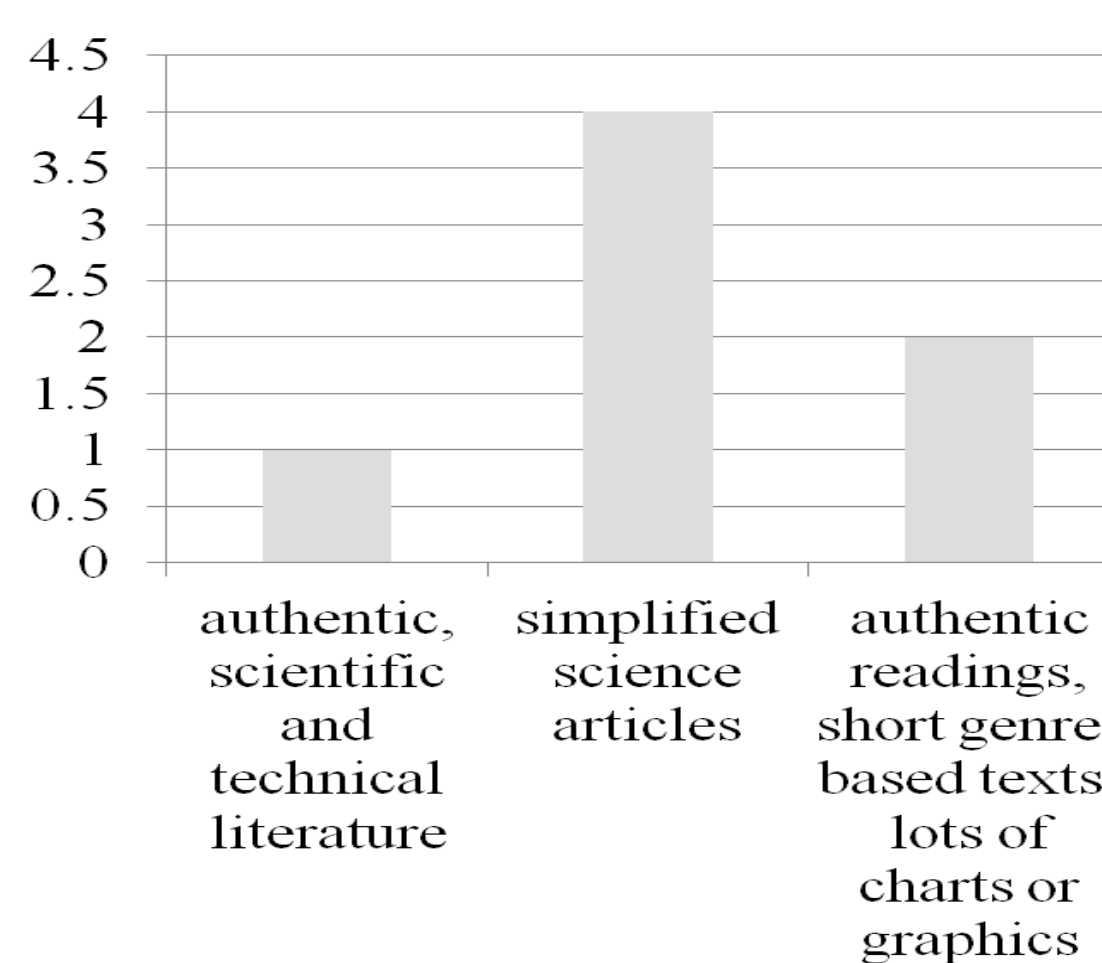


Fig 5. Types of Text and Language

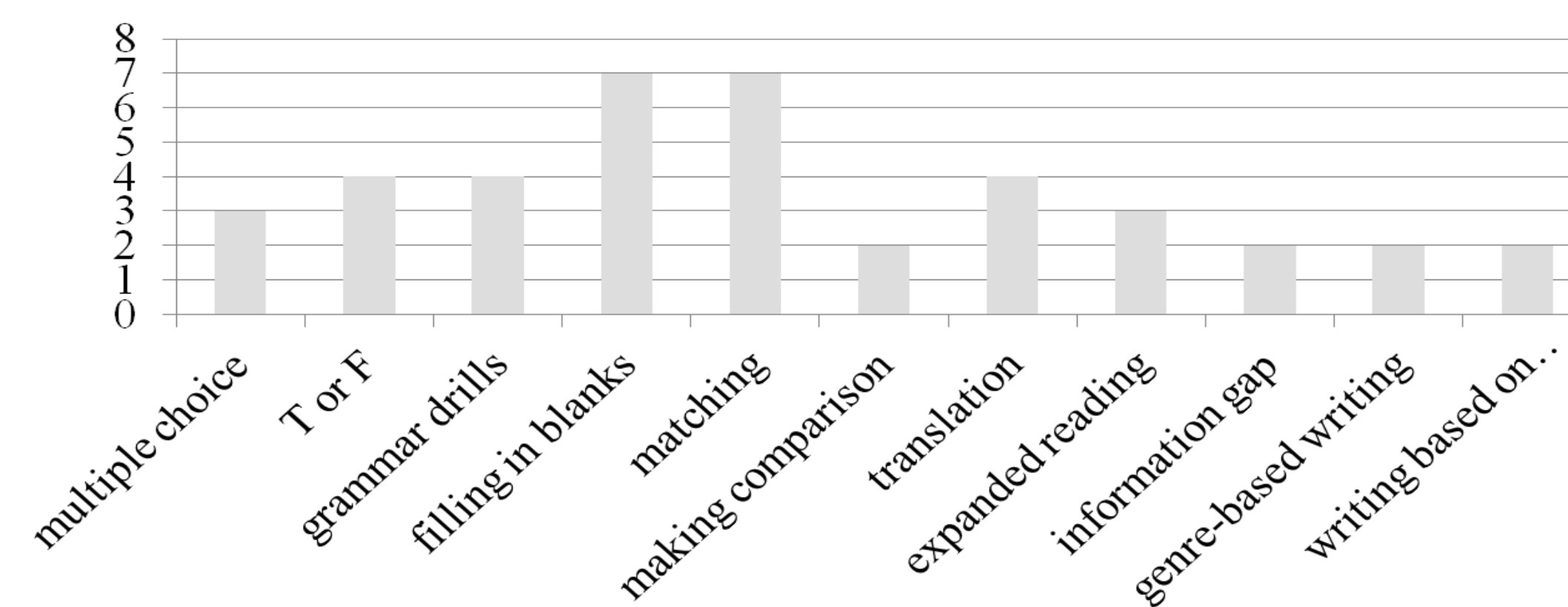


Fig 6. Main Types of Exercises/Activities

2. Main results of intermediate level

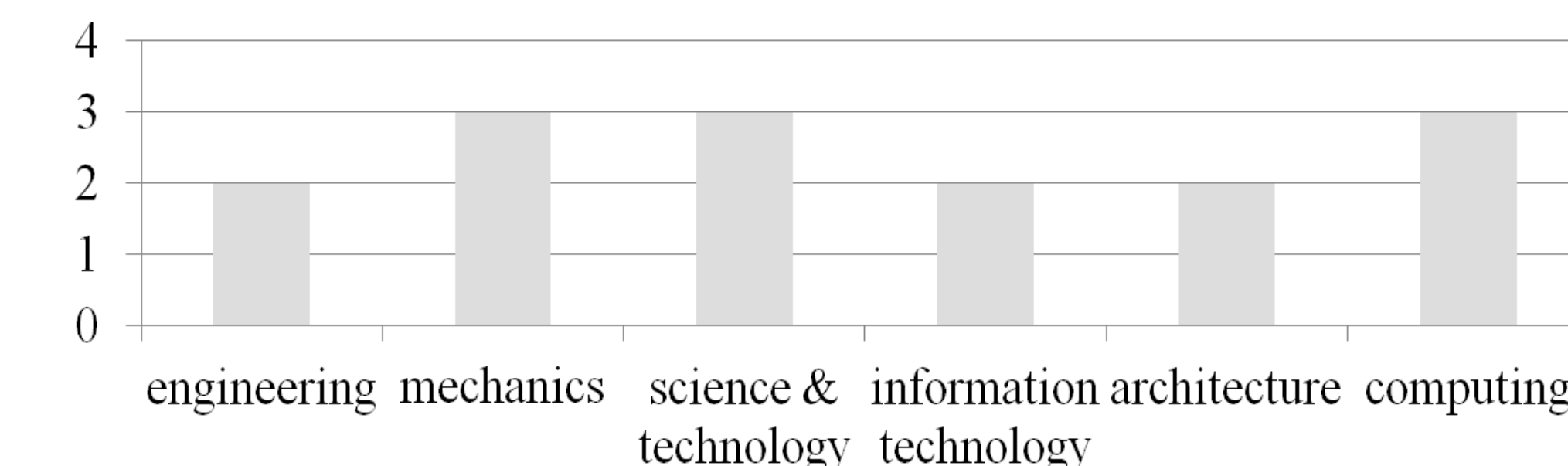


Fig 7. Main Content Areas

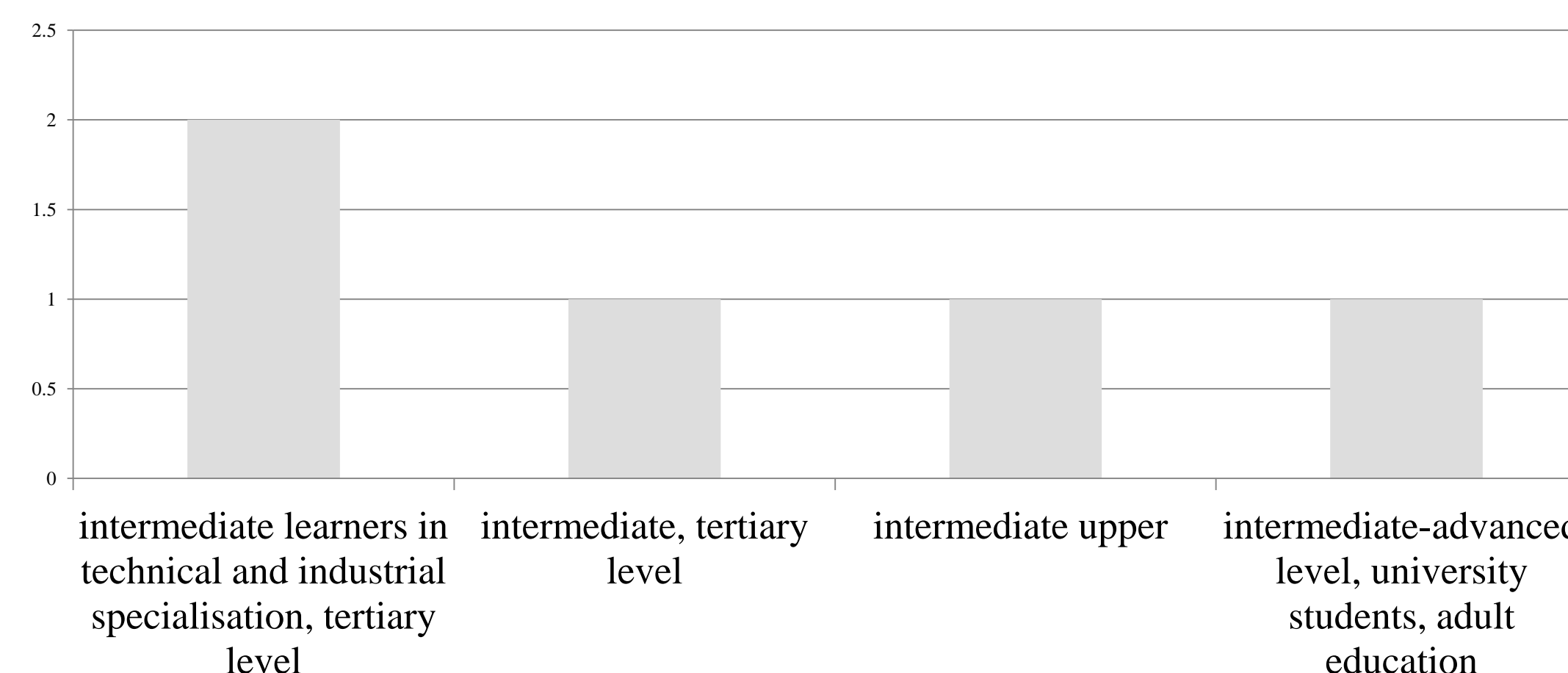


Fig 8. Target Level

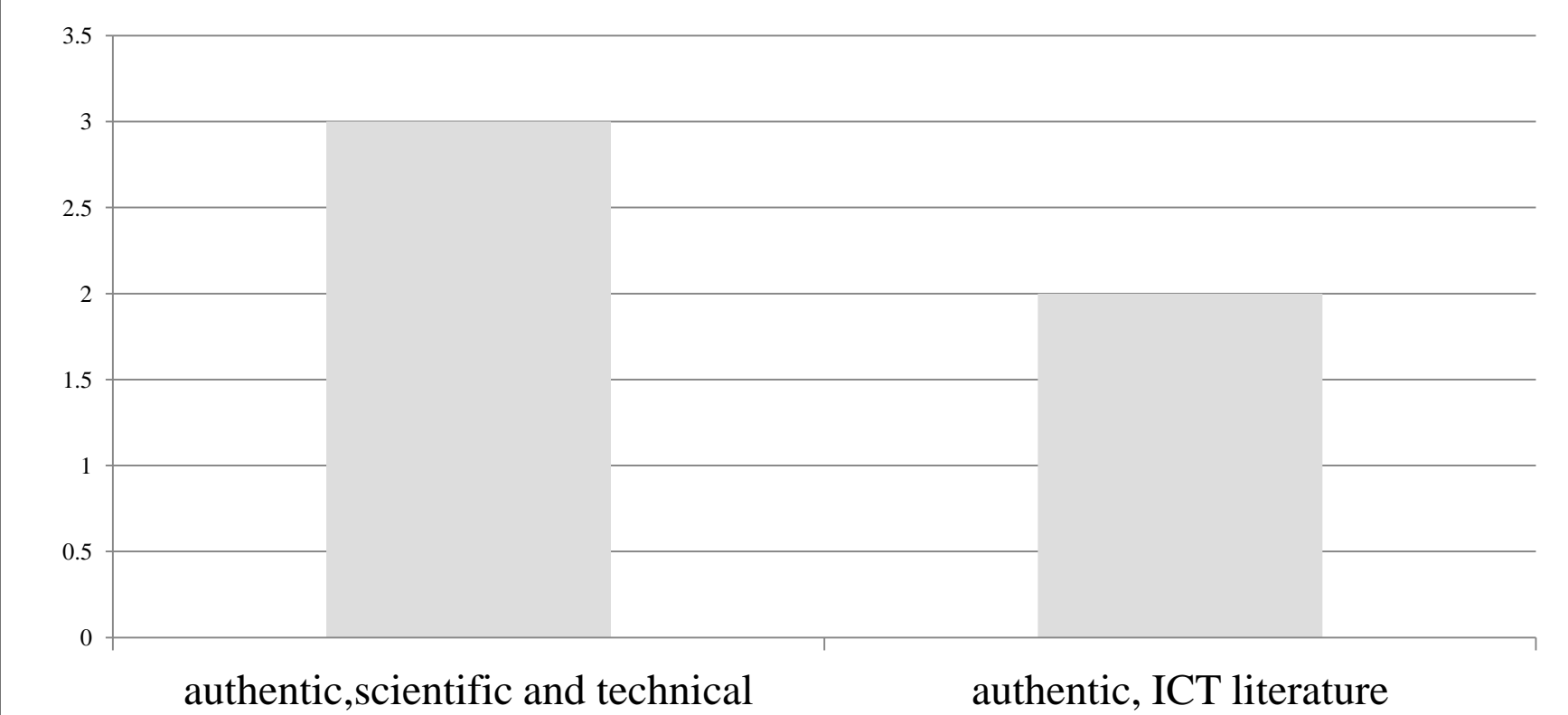


Fig 9. Text Types & Language

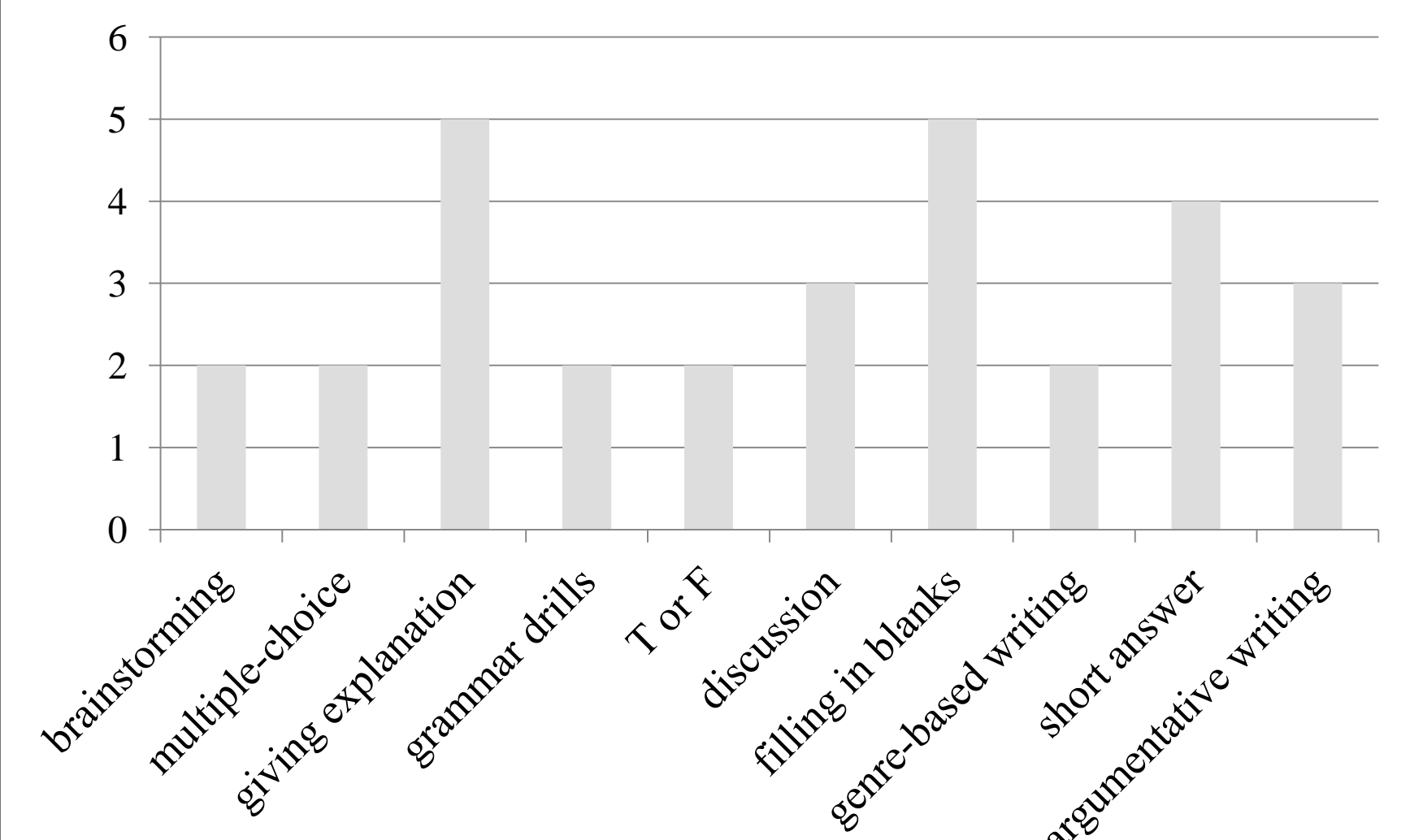


Fig 10. Main Types of Exercises/Activities

3. Analysis of “Professional English in Use: Engineering”: The textbook of the Technical English Program of UEC Tokyo

Target students: Professional engineers; Students of engineering

Medium of Instruction: English

Types of Syllabi: Topical (Theme-based)

Main Content Areas:

Design, Measurement, Materials Technologies, Manufacturing and Assembly, Static and Dynamic Principles, Energy and Temperature, Fluids, Mechanisms, Electricity

Target Level: Intermediate of upper intermediate (B1 to B2 in the Common European Framework)

Types of Text and Language:

Authentic, scientific and technical literature; simplified scientific readings, short genre-based texts, lots of charts or graphics

Main Types of Exercises/Activities:

Filling in blanks using words or charts, oral report of designated concepts, grouping words and concepts, T or F, matching, spelling games, replacing expressions in texts with alternative words and phrases, completing texts with correct words

Answer Key: Yes

Appendixes: 13 (Three-dimensional drawings, Shapes, Units of measurement, Chemical elements, Structural elements and types of load, Moments, Vapor, cooling and thermal inertia, The electromagnetic spectrum, Pipe and hose fittings and valves, Siphonic action, Managing rotary motion, Electrical and electronic components, Sensing, measuring and regulating devices)

Index: Yes

Discussion and Conclusion

- Limited EST materials compared with general EFL textbooks in Japan
- Lack of serialization: difficult to build EST programs
- Benefits to use content-based textbooks for teachers without specified knowledge of the students: the same results by Channal, et al. (2013)
- Less English-only ESP textbooks than bilingual ESP textbooks at basic or introductory level
- Topical and grammar-based syllabuses: more common
- Need to consider the balance between content area and language competence of the textbooks
- Need to have more discussion-based, critical-thinking-based, and skill-based activities

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