

# 스마트 플랫폼 적용을 통한 해사영어 교육 효과 분석

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## Analysis of the effectiveness of Maritime English education through the application of a smart platform

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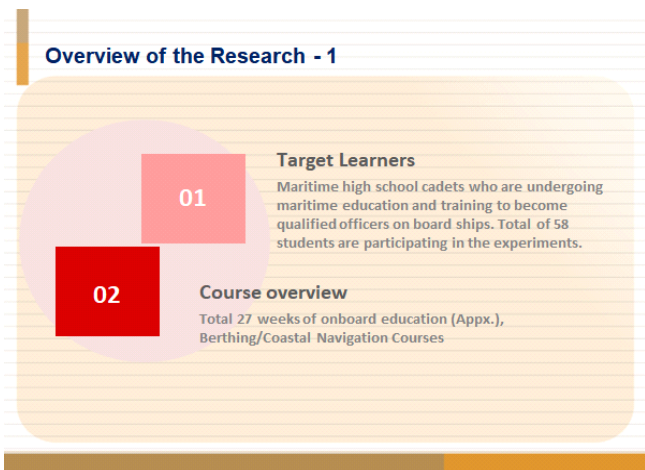
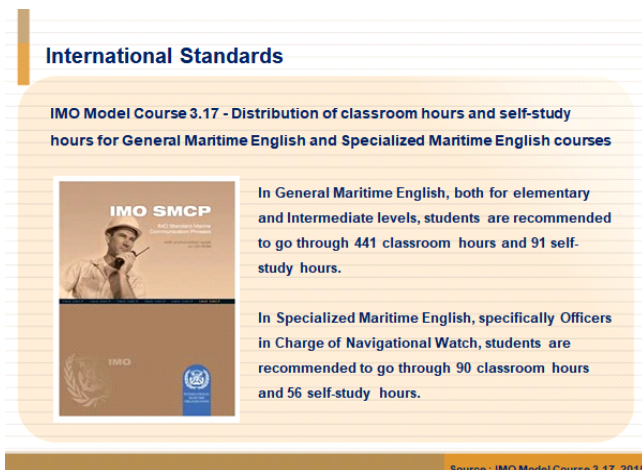
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**요약** : 선원의 훈련, 자격증명 및 당직근무의 기준에 관한 국제협약(STCW)은 상선에 당직사관으로 승진하기 위하여 갖추어야 할 요건을 명시하고 있다. 해사영어 활용능력은 STCW에서 중요하게 다루어지는 자격요건 중 하나로, 각 국가 담당 기관은 국내외 규정에 적합한 해사영어 교육을 시행하고 있다. 본 연구는 예비 해기사 대상 영어능력 배경설문조사를 시행하여 해사영어학습 및 활용능력과 연관성 있는 개인요인들을 분석하였다. 나아가 표준해사영어(SMCP) 학습 플랫폼 활용 실험을 통해 성적향상 정도를 측정하고 그 효과성을 분석하였다. 이를 통해 해기교육에서의 해사영어 자동채점 플랫폼 적용 가능성을 조사하였으며 향후 해사영어 교육 외에 그 범위를 넓혀 활용될 수 있을 것으로 사료된다.

**핵심용어** : 해사영어, 교육효과, 웹 플랫폼, 해사교육

**Abstract** : The International Convention on Standards for Training, Certification, and Watchkeeping of Seafarers (STCW) outlines the qualifications that maritime cadets must meet in order to serve as merchant marine officers. Maritime English is one of the most essential qualifications for STCW, and each national authority is implementing Maritime English education that complies with national and international regulations. In this study, an English proficiency background survey was conducted to investigate the factors related to the Maritime English skills and competencies. In line with this, maritime cadets utilized the Standard Maritime English Communication Phrases (SMCP) learning platform to track their learning progress and its efficacy. This study examined the applicability of the automatic scoring platform for Maritime English education, as well as its future potential for widespread use in the maritime education field.

**Key words** : Maritime English, Web platform, Maritime Education, Education Efficacy



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## Overview of the Research - 2

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### Initial Test

The initial test is conducted to assess students' level of (Maritime) English. Further analysis is conducted to incorporate test results with students' backgrounds.

02

### Learning / Check-up Test

Students will go through at least eight weeks of the SMCP learning period on the platform.

03

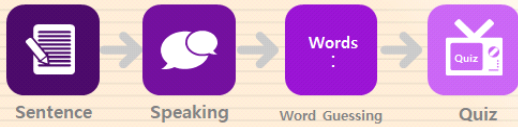
### Final Test

After the final tests, factors will be analyzed how each personal element affects students' test score enhancement.

## Maritime English Learning and Testing Platform



## Platform Structure



Students are asked to write out Standard Marine Communication Phrases (SMCP) during the exercise

Students' spoken words are transcribed and displayed as text on a screen during the exercise.

The SMCP glossaries are presented as a series of questions to guide students' learning and testing process

Hints are provided for each question to guide the students' learning and testing process

## PHP Similar\_Text fuction



```
PHP_FUNCTION(similar_text)
{
    zend_string *t1, *t2;
    zval *percent = NULL;
    bool compute_percentage = ZEND_NUM_ARGS() == 3;
    size_t sim;

    ZEND_PARSE_PARAMETERS_START(2, 3)
        Z_PARAM_STR(t1)
        Z_PARAM_STR(t2)
        Z_PARAM_OPTIONAL
        Z_PARAM_ZVAL(percent)
    ZEND_PARSE_PARAMETERS_END();

    if (ZSTR_LEN(t1) + ZSTR_LEN(t2) == 0) {
        if (compute_percentage) {
            ZEND_TRY_ASSIGN_REF_DOUBLE(percent, 0);
        }
        RETURN_LONG(0);
    }

    sim = php_similar_char(ZSTR_VAL(t1), ZSTR_LEN(t1), ZSTR_VAL(t2), ZSTR_LEN(t2));

    if (compute_percentage) {
        ZEND_TRY_ASSIGN_REF_DOUBLE(percent, sim * 200.0 / (ZSTR_LEN(t1) + ZSTR_LEN(t2)));
    }

    RETURN_LONG(sim);
}
```

Source : <https://github.com/php/php-src>, accessed on March 28, 2023

## Data Collection



- Time spent on each type of question
- Total time spent on the learning platform
- Test scores for initial, check-up and final test
- Scores on the level of questions (i.e., beginner, intermediate, advanced)
- Number of Test Takings
- Student Learning Habits/Patterns
- Number of Mouse Clicks



- First test score and the final test score (mean difference)
- Scores depending on the level of questions
- Score enhancement by the types of questions (Speaking, Reading, Listening, Writing)
- Score analysis after applying coefficient weight
- The level of students score enhancement
- Analysis on test score for the top 20% of students and bottom 20 percent students
- Test time in relation to test score (e.g., test scores, learning scores)
- SMCP studying time required to be qualified as budding marine officer
- Regressions (Building up English-level prediction model)
- Preference of the types of questions (e.g., fill-in-the-blank, open-ended etc.)

## Statistical Analysis Method



Survey Questions



Score Enhancement

### Pearson's Correlation Test

Determine the strength and direction of the linear relationship between students' survey responses and Maritime English test scores.

### Paired T-test

Identify the significant difference between means of initial test, check-up test and the final test score.

### ANOVA Test

Identify if groups of students with different levels of English have statistically different means of scores.

### Regressions

Determine the relationship between variables, and further identify the important independent variables.

$$\text{SMCP Test Score} = \beta_0 + \beta_1 * \text{Variable\_A} + \beta_2 * \text{Variable\_B} + \beta_3 * \text{Variable\_C} + \epsilon$$