Developing Physical Therapy Students'Medical Report Writing Skills During COVID-19: A TPACK Based ESP Course

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مستخلص

حاول البحث الحالى دراسة أثر مقرر فى اللغه الانجليزيه لاغراض متخصصه قائم على TPACKلتنمية مهارات كتابة التقارير الطبيه لدى طلاب العلاج الطبيعى أثناء كوفيد 19.اعتمد البحث على التصميم شبه التجريبي و شارك فى الدراسه 100 طالب من الفرقه الاولى بقسم العلوم الاساسيه بكلية العلاج الطبيعى فى جامعة كفر الشيخ، تم تقسيمهم بالتساوى الى مجموعتين احداهما تجريبيه و الاخرى ضابطه. أجاب الطلاب عن استبيان تحليل الاحتياجات الذى أوضح احتياج المشاركين لتنمية مهارات كتابة التقارير الطبيه، ثم أجابوا على اختبار كتابة التقارير الطبيه، من اعداد الباحثين قبل و بعد تقديم مقرر المصطلحات الطبيه، باعتباره مقرر اللغه الانجليزيه لاغراض متخصصه الوحيد الذى يتم تقديمه لشعبة العلوم الاساسيه بكلية العلاج الطبيعى. تم تعديل مقرر المصطلحات الطبيه فى ضوءTPACKلتقديمه للمجموعه التجريبيه، بينما درست المجموعه الضابطه مقرر المصطلحات الطبيه دون تعديل. أوضحت نتائج التطبيق البعدى لاختبار مهارات كتابة التقارير الطبيه تفوق طلاب المجموعه التجريبيه على الضابطه. و كان حجم أثر المقرر فى اللغه الانجليزيه لاغراض متخصصهالقائم على TPACK مرتفع ($d=3.176$).

*الكلمات المفتاحيه:*الانجليزيه لاغراض متخصصه، علاج طبيعى، تقارير طبيه

Abstract

The research examined the effect of a TPACK based ESP course on developing physical therapy students' medical reports writing skills during the COVID 19 Pandemic. The quasi- experimental design was used. There were 100 freshmen randomly selected from the Basic Science Department at Faculty of Physical Therapy in Kafrel-Shikh University. Participants were divided into a control group and an experimental one, each group consisted of 50. Both groups answered the needs analysis questionnaire which revealed the participants' needs to study medical reports writing skills. Then, the groups answered the Medical Report Writing Test, developed by the researchers before and after the course administration. The experimental group received a TPACK based modified version of the Medical Terms Course، while the control one received the course traditionally.The Medical Terms Coursewas the only ESP course introduced to Physical Therapy in Kafrel-Shikh University.Results of the post administration of the test revealed that the experimental group outperformed the control one in the medical reports writing test. The effect size for the TPACK based ESP course on the medical reports writing skills was large (d=3.176).

Keywords: ESP, TPACK, Covid 19, SOAP notes, medical reports, physical therapy

Introduction:

The coronavirus disease, named as (COVID-19), is the result of severe acute respiratory syndrome coronavirus 2. It affects the healthcare systems in the world. The virus spreads due to the infections, limited testing, and lack of protective equipment for healthcare providers (Gondi et al., 2020). The infectionof Covid-19 causes mortality in crowd density (Bhadra et al., 2021). Governments applied social distancing interventions during the spring of 2020 (Okabe-Miyamoto et al., 2021).

Covid-19, asa public health crisis, affects medical education that implements e-learning platforms(Rafi et al., 2020). Medical education shifts from traditional teaching toonline and electronic teaching (Shachar& Neumann,2003). The shift from traditional to online learning provides self-directed learning experiences. Technology is used for medical education to overcome the drawbacks of the pandemic. Interactive technology creates customized student-centred learning experiences (Tang et al.,2022). Egyptian universities depend on Zoom and Microsoft Teams as major online teaching tools.

Koch (2014) refers to the elements of designing technology-enhanced courses, such as determining the learning outcomes, selecting suitable learning materials, scaffolding students' workload, facilitating asynchronous learning processes, maintaining communication, and offering technical support for students. English for Specific Purposes (ESP) focuses on technical terms to help students in future careers. The digital age offers improved opportunities for meaningful ESP learning experiences. ESP teaching depends on technology in the COVID-19 pandemic (Stoyanova, 2021).

ESP instructors need to integrate technology in pedagogical methodologies to design innovative learning activities (Wichadee,2017). The integration targets technology, pedagogy, and content in ESP teaching (Mulyadi et al.,2020). The Technological Pedagogical Content Knowledge (TPACK) is a framework that aims at tailoring the teaching methodology for designing learning experiences based on technology. The TPACK framework is used to operationalize the ESP courses (Archambault & Barnett, 2010). TPACK is defined as teachers' knowledge of how to integrate technological facilities and pedagogical methods in teaching a specific content (Tseng,2018).

The doctor-patient written communication is the written information of the clinical history of the patient (Estopà et al.,2020). The medical report, a type of written communication, describes the diagnosis and treatment (Falcón &Basagoti, 2012). The Subjective, Objective, Assessment, and Plan (SOAP) note is a communication tool used for the medical system. The SOAP notes facilitate the written communication among medical professionals to improve the health care process (Nguyen et al.,2019).

Comprehension difficulties of the terminology used in the medical reports are caused by different reasons. Specialized knowledge accumulation included in the medical reports means that the medical terms used are more than other words in the report. Semantic opacity means that the medical terms are not clear for patients. Semantic confusion occurs when the medical terms are like other terms of general use, while having different medical meanings. Semantic ambiguity means that the medical terms can be interpreted in different ways causing patients' anxiety (Estopà& Montané,2020).

There is increasing demands for students' ESP courses (Finch, 2014). Designing an ESP course is a challenging task (Jong& Perdomo,2016). Medical students'needs from ESP courses are reading articles and textbooks as well as writing clinical reports and short essays (Lodhi et al.,2018). Most ESP courses focus on writing skills as students' critical needs (Alsamadani,2017).

While there is a growing interest in the TPACK framework,limited research on TPACK based ESP courses exists (Beriswill et al., 2016). Medical education depended on online learning during the COVID-19 pandemic. Egypt locked down universities in March 14,2020 according to the Prime Minister Decree No.(717), anduniversities depended on blended learning. Though the language of teaching in the Physical Therapy Faculty is English, the bylaw of KafrEL-Sheikh Physical Therapy Faculty includes only one English course: 'Medical Terms'.

The researchers developed a needs analysis questionnaire to identify students' necessities, lacks, and wants concerning ESP. The questionnaire was administered to every research participant. Results of the participants' answers showed that 80% of them selected writing as the most important skill to be learnt in an ESP course. They expected to write medical reports by the end of the ESP course.

The researchers designed a Medical Report Writing Test. It was administered to 30 first year university students, freshmen, enrolled in the course 'Medical Terms' on October 18, 2021. Those students were not included in the research participants. The test included a clinical case on which students were asked to write a medical report. Results showed that 90 % of the students cannot write a comprehensive medical report. The problem is as follows:
Physical Therapy studentswere weak in medical report writing skills.

Research Purpose
The research aim was to examine the effectiveness of an ESP course based on the TPACK model in developing physical therapy students' medical report writing skills during the COVID-19 pandemic.

Research Questions
-What are the ESP needs of freshmen in Physical Therapy Colleges?
-What are the medical report writing skills critical for freshmen in Physical Therapy Colleges?
-What is the effectiveness of a TPACK based ESP course in developing freshmen's medical report writing skills?

Research Hypotheses
Research Hypothesis
-There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the skill of summarizing the patient's history using adequate supportive ideas in the post administration of the Medical Report Writing Test in favour of the experimental group.
-There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the

skill of using appropriate medical terms to determine the patient's needed examinations in the post administration of the Medical Report Writing test in favour of the experimental group.

-There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the skill of prioritizing the patient's main problems using well-structured sentences in the post administration of the Medical Report Writing test in favour of the experimental group.

-There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the skill of diagnosing the patient's condition using correct grammatical rules in the post administration of the Medical Report Writing test in favour of the experimental group.

-There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the skill of identifying the therapeutic goals in a logical order in the post administration of the Medical Report Writing test in favour of the experimental group.

-There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the skill of writing the patient's treatment plan using coherent sentences in the post administration of the Medical Report Writing test in favour of the experimental group.

-There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the skill of writing the patient's follow-up plan using different writing mechanics in the post administration of the Medical Report Writing Test in favour of the experimental group.

-There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the overall medical reports writing skills in the post administration of the Medical Report Writing Test in favour of the experimental group.

Research Significance

-Developing physical therapy students' medical report writing skills.

-Offering an instructor's guide on designing an ESP course based on TPACK for medical students.

-Responding to the lack of TPACK based ESP courses.

-Offeringguidelines for further comparative research on online and face to face ESP courses.

Research Delimitations

-Participants were 100 freshmen enrolled in the Basic Science Department, Faculty of Physical Therapy, Kafr El-Sheikh University.

-The first term of the academic year(2021/2022), October 25- December 27, 2021.

-These medical report writing skills:summarizing the patient's history using adequate supporting ideas, using appropriate medical terms to determine the patient's needed examinations, prioritizing the patient's main problems using well-structured sentences, diagnosing the patient's condition using correct grammatical rules, identifying the therapeutic goals in a logical order, writing the patient's treatment plan using coherent sentences, and writing the patient's follow-up plan using different writing mechanics.

Definition of Terms

Technological pedagogical content knowledge (TPACK)

In this research,the TPACK framework is used to operationalize the ESP course entitled 'Medical Terms' offered to Medical Therapy students in Kafr El-Shiekh University. It referred to the integration of technology and teaching strategies to deliver ESP content knowledge to students.

ESP Course

It referred to the 'Medical Terms' course modified according to the students' answers to the ESP need analysis questionnaire.

Medical Report Writing Skills

In this research, medical report writing skills referred to the skills needed by freshmen medical therapy students for documentation, diagnosis, and treatment of each patient. These skills were:

summarizing the patient's history using adequate supporting ideas, using appropriate medical terms to determine the patient's needed examinations, prioritizing the patient's main problems using well-structured sentences, diagnosing the patient's condition using correct grammatical rules, identifying the therapeutic goals in a logical order, writing the patient's treatment plan using coherent sentences, and writing the patient's follow-up plan using different writing mechanics.

Review of Literature and Related Studies

The COVID-19 pandemic causedlockdowns in the spring of 2020, sotechnology-based teaching was widely used(Carolan et al.,2020). Since May 2020, almost 1.21 billion students were affected,69.3% of the world student population. Technology-based teaching was a challenge for instructors and students. Instructors suffered from lack of technological skills, while students suffered from isolation and lack of interaction (Huang et al., 2020). In the pandemic, medical institutions offered lectures and other academicactivities using digital platforms for flexibility (Mukhtar,2020).

Chet et al.(2022) analysed Cambodian Higher Institution students'learning commitment in the COVID-19 pandemic as an indicator of learning satisfaction. Participants were 1002 undergraduate students who answered an online survey. Data analysis of students' answers revealed that 81.4% of them did not want to learn online as online learning negatively affected their academic performance and learning commitment.

The medical education at Al-Faisal University faced many challenges during the pandemic, like communication, assessment, and anxiety. Online learning increasedmedical students' education (Rajab et al., 2020). Agarwal et al.(2022) investigatedmedical students' attitudes towards online learning during the Covid-19 pandemic. An online survey was conducted in 2020 on 194 medical students in Uttarakhand. The survey aimed to evaluate the feedback of online teaching. Results revealed the reluctance of medical students to continue online medical teaching. They agreed that they learnt better in face-to-face teaching than online.

ESP, a field of English language teaching,targets specific students for purpose. ESP was suggested by Barber in 1962 and developed by Hutchinson and Waters in 1987 as a teaching field of second/foreign language.ESP field is related to professional and academic studies and includes English for Occupational Purposes as well as English for Academic Purposes. Many ESP subfields have appeared, likeEnglish for Medical Purposes,English for Business Communication, English for Vocational Purposes, Electronic Business English, and English for Sociocultural Purposes (Viana et al.,2019).

The term 'specific' in ESP highlights the importance of needs analysis. ESP courses depend on students' reasons for learning English (Flowerdew, 2013). Needs analysis is a prerequisite for designing an ESP course and determining its intended learning outcomes (Brown& Green 2016). Richards and Schmidt (2013) maintain that in an ESP course, the content and outcomes of the coursesatisfy the needs of the targeted students.

An ESP course aims to providelearner-centred language instruction so that students can use English for academic and professional purposes. English for Medical Purposes, a type of ESP, is the English language instruction offered to medical students for their professions (Choi,2021).Students enrolled in medical colleges focus on the medical terms and ESPsatisfies such needs (Lodhi et al.,2018).

Mihai et al.(2022) examined the emotional and social engagement of university students in an ESP course during COVID 19. Participants were 394 university students from different programs in a Romanian university who studied online ESP courses during 2020–2021 academic year. Participants' answers on the questionnaire revealed that the online ESP courses focused on their engagement and offered learning environments during the pandemic. Participants' emotional and social engagement ranged between moderate and high.

Needs analysis means asking students about what they need to do in a target situation, then the lack of students' knowledge is determined. ESP instructors match the ESP goals to the required skills to increase students' abilities in their future jobs (Wangmo et al.,2021). ESP teaching depends on the cooperation of language instructors and specialization experts to achieve some professional goals to satisfy students' needs (Li & Huo, 2014). Based on the dataof the need analysis, new ESP courses are developed, or existing courses are updated.

There are five key stages used in developing an ESP course: needs analysis, course design, teaching and learning, assessment, and evaluation. Needs analysis covers necessities, lacks, as well as wants. Necessities are the required skills needed to perform a specific task, lacks refer to the gap

between a student's current performance and the target level of proficiency, and finally wants are what students feel that they need to perform language tasks (Górska- Poręcka, 2013).

The ESP instructor designs the course and develops the materials according to the course goals and students' needs. Teaching ESP courses depends on dynamic activities to keep students motivated (Jong& Perdomo,2016). Assessment of students' performance of the targeted skills, whether formative or summative, is a key stage in the ESP teaching process. Evaluation means that the ESP instructors reflect on their performances for improvement (Górska- Poręcka, 2013).

Chan et al. (2022) investigatedmedical students' views onthe importance of English language (EL) skills from. Participants were 24 medical students from a five-year international medical program. They participated in six focus group interviews. Results revealed that EL skills are considered professionaland social requirements for the participants' medical training and future careers. Researchers recommended the availability of EL courses for medical students.

ESP courses are usually based on a framework to satisfy students' needs to ensure the integration of language and specialization. Technological pedagogical content knowledge, TPACK or TPCK, is the framework introduced by Mishra and Koehler in 2006. It was based onShulman's (1986)Pedagogical Content Knowledge (PCK) Framework that focuses on pedagogical knowledge and content knowledge. Pedagogical knowledge (PK) is knowledge of teaching methods and learning processes, while Content knowledge (CK) is knowledge ofthe subject taught. Instructors need pedagogical content knowledge (PCK) for relating PK to CK. PCK enablesinstructors to tailor the content knowledge to students' background knowledge. Since PCK neglects integrating technology in education, TPACK adds technological knowledge (TK) to content knowledge and pedagogical knowledge (Boonsue,2021; Chai et al., 2013).

Pettersson (2018) introduced an ESP course for Physiotherapy students in a university in Spain using a human anatomy application that integrated

mobile-assisted language learning in different tasks. Students' answers on the questionnaire revealed their readiness to buy an application on English for physiotherapy due to the efficiency of the application introduced that had educational and professional purposes.

Hubber and Loong (2013) as well as Kazu and Erten (2014) state that the TPACK framework depends on the interaction of threeESP domains: technological content knowledge (TCK), technological pedagogical knowledge (TPK), and finally pedagogical content knowledge (PCK).TCK isintegrating technologies in the learning content. TPK is the instructor's ability to use technologies in teaching English. Furthermore, PCK is selecting effective teaching approaches to deliver thecontent.

Egilsdottiret al.(2022) explored the effect of a TPACK based clinical course during the COVID pandemic on 55 nursing students' achievement. The course entitled 'Fundamentals of Care' was redesigned according to the TPACK and administered for 10 weeks through different mobile learning tools. Participants answered a questionnaire and were interviewed to examine the effect of the redesigned TPACK course. Students' answers on the questionnaire revealed that virtual patients and simulations were meaningful mobile learning tools. The interviews showed that alearning environmentenhanced by technology prepared students for clinical practice.

The TPACK frameworkaimed to overcome the absence of a theory for integrating technology in education (Rosenberg & Koehler, 2015).It offers a structure for integrating technology, pedagogy, as well as educational content. The process of combining the TPACK domain is unique in each course (Stone et al.,2020). The TPACK integrates teaching pedagogy, content delivery, and digital technology (Miguel-Revilla et al.,2020).

The TPACK framework focuses on integrating knowledge about teaching, content, and technology to support students' learning. It relates the teaching methods and content to technology inclusion. It focuses on connectingcontent, pedagogy, andtechnology knowledge (Voithofer et al., 2019). TPACK improves students' achievement due using technology in

teaching specific content through appropriate strategies(Akturk& Ozturk, 2019).

The TPACK is a theoretical framework that highlightsinstructor's knowledge of teaching methods for content deliverythrough technology(Morrison, 2019). TPACK outlines how to use technology in teaching (Ebersole, 2019). TPACK is the dynamic integration of content, pedagogy, and technology. TPACK dependsselecting technological resources to develop students' knowledge and skills (Yeh et al.,2021).

Content Knowledge (CK) is the content of a specialized subject. Pedagogical Knowledge (PK) covers the teaching and learningmethods. It includes development and implementation of lesson plans, classroom management, learning activities, and student assessment. Technological Knowledge (TK) means using technological devices and different applications in teaching and learning. It includes installing, operating, and troubleshooting technological programs (Kim, 2017).

PCK is using appropriate teaching methods and learning activities in the subject. TPKis employing various technologies in teaching, like smart classrooms. TCK means how to represent a subject by technological tools, like simulation and modelling to deliver the content.Technological Pedagogical Content Knowledge, TPCK or TPACK, is connecting technology, content, and pedagogyin teaching (Gómez-Trigueros& de Aldecoa,2021).

Lytovchenko and Voronina (2020)examined the use of Massive Open Online Courses (MOOCs) as a learning tool in ESP. Participants were 58 students at the National Technical University in Ukraine. English for STEM course was administered to the participants who received an online questionnaire. The questionnaire examined students' attitudes towards using MOOCs as a learning tool. Results indicated that 83.3 % of the participants were satisfied with using MOOCs in an ESP course during quarantine.

Lodhi et al.(2018)examined medical students' ESP communicative professional needsin Pakistan. Students, 200 participants, answered a close

ended questionnaire to analyse their ESP needs. The questionnaire tackled the necessities, lacks, and wants of students' communication in medical related topics. The findings revealed the gap between the current English skills of medical students and thedesired levels of English proficiency skills. Medical students maintained the importance of listening, speaking, and report writing in medical professions.

A medical report includes data on diagnosesand therapies.Such data are structured as well as unstructured.Structured dataare personal information, like name, surname, ID number, as well as date of birth. Unstructured data refer to diagnoses and therapies(Advic et al.,2020). A medical report is a written document, based on medical terminology, offered by medical professionals. Medical reports explain and record the diagnosis and therapeutic procedures occurred in the healthcare visits (Estopà et al., 2020).

Medical reports are used for documentation, and electronic documentation enables access to huge amounts of data. Inaccurate medical data cause severe consequences. Medical professionals should make the clinical data, included in the medical reports, accessible. The electronic medical reports organize and document patients' information to be easily followed by different medical professions (Dolan et al., 2016; Rivkin et al., 2016; Seo et al., 2016).

The Subjective, Objective, Assessment, and Plan (SOAP) note is atechnique used by healthcare professions to organize and document patient treatments (Andrus et al., 2018; Gogineni et al., 2019).The SOAP note was used in the medical profession in 1950s to assist medical professionals in performing their tasks. The SOAP note was suggested by Dr. Lawrence Weed to change the conventional medical documentation into a scientific structured framework based on clinical reasoning (Lawrence et al.,2018).

The SOAP note offers a framework for assessing clinical information of the patient's current condition. Healthcare professionals use the SOAP note for clinical judgement. They evaluate, identify, and treat patients according to the available data. The SOAP note is used as a source of information on the patient's health state as well as a communication tool

among medical professionals. The format of the SOAP note is used as an index to gather information (Podder et al.2021; Sando et al., 2017; Santiago et al., 2016)

Medical professionals use the SOAP note for documentation, diagnosis, and treatment (Chan et al., 2016). The widespread use of the SOAP format in medical professions is due to its feasibility and precession (Arshad et al.,2015). Medical reports including SOAP notes depend on symptoms,diagnoses, descriptions, biochemical analyses, therapies, and other medical terms (Avdic et al.,2020).

The Subjective section of the SOAP note is for the patient's expressions. It refers to the subjective perceptions, opinions, or feelings of the patient or a close relative. The patient reports what is known as the chief complaint, the current condition (Podder et al., 2021).This section is a verbal summary of the reported history and symptomsmentioned by the patient. The objective sectionreports measurable data by medical professionals. It refers to different types of examinations: physical, cardiovascular, respiratory, abdominal, and neurological examinations. Assessment is a comparison of the patient's condition to the previous diagnosis. Plan determines the future medical steps whether using the same treatment or offering new medications according to the patient's current condition (Arshad et al.,2015; Chan et al., 2016).

SOAP notes are considered problem oriented medical reports used by health care professionals. The SOAP format can be customized to any study. SOAP note is a type of medical reports used to offer quality patient care (Arshad et al.,2015).It develops medical students' critical thinking and problem-solving skills (Andrus et al.,2018).

Medical instructors need TPACK to integrate technology, pedagogy, and content as areas of knowledge. They use technological tools to offer interactive learning content and use the teaching strategies appropriate to students' learning needs. ESP courses depend on needs analysis of students' necessities, lacks, and wants concerning learning English. Since Egypt is an Arabic speaking country where medical professionals communicate in

Arabic with their patients, medical students need to learn English for writing. The SOAP note is a medical report writing instrument used among medical professionals to share patients' clinical information for further healthcare procedures.

Method
Research Design
This research depended on the quasi-experimental pretest- posttest design.

Participants
Participants were 100 freshmen enrolled in the Basic Science Department, Faculty of Physical Therapy, Kafr El-Sheikh University. They voluntarily participated and were divided into two equal groups: control and experimental. Thet test(t= 0.442) showed the absence of a statistically significant differencebetween the mean scores of the participants in the control and experimental groupson the pre administration of the Medical Report Writing Test.

Instrumentation

ESP Needs Analysis Questionnaire
Questionnaire Aim
The needs analysis questionnaire aimed to identify medical therapy freshmen's needs from an ESP course.

Questionnaire Description
The items of the needs analysis questionnaire depended on previous literature and related studies, likeBrown and Green (2016), Choi (2021), and Lodhi et al.(2018). The questionnaireconsisted of four sections: personal background, necessities, lacks, and wants. Students selected the answers that described their needs. The first section gathered information on students' personal background on the English Language. The second section, necessities, was structured on students' required ESP skills. The third section, lacks, elicited students' levels of proficiency in English language based on a five- point Likert Scale ofexcellent, very good, good, fair, and poor. The fourth section, wants, measured students' expectations from learning the ESP course. There was a blank space by the end of the questionnaire to write any suggestions for the ESP course (Appendix A).

Questionnaire Piloting

The needs analysis questionnaire was piloted on 30 students enrolled in the Basic Science Department, Faculty of Physical Therapy, Kafr El-Sheikh University on October 18, 2021. The piloting examined the clarity of the items of the questionnaire and its statistical features.

Questionnaire Reliability

The Split-Half Coefficient (0.812)proved thereliability of the needs analysis questionnaire.

Questionnaire Validity

The content validity of the needs analysis questionnaire depended on the jury members whodetermined the appropriateness of the items and suggestedadditional items to be included.Following the jury members' recommendations, the questionnaire was modified into its final form (Appendix A).The discriminatory validity was significant at the (0.01) level sincethe critical ratio was (8.422).

Questionnaire Administration

The participants answered the questionnaire on October 21, 2021 to identify their ESP needs by answering questions on their necessities, lacks, and wants from an ESP course. Researchers modified the 'Medical Terms' course according to the course goals and participants' needs.

Medical Report Writing Skill Checklist

The checklist was designed in light of previous studies and literature review, like Arshad et al.(2015), Chan et al.(2016), andPodder et al.(2021).

Checklist Purpose

The purpose of the checklist was to identify the ESP medical reports writing skills appropriate for freshmen in Physical Therapy College.

Checklist Description

The checklist integrated general writing skills into the specific professional medical report writing skills. While there were 14 skills in the initial form, it was modified in light of the recommendations of the jury members(Appendix B). They recommended integratingthe general English writing skills into the medical report writing skills. According to the

modifications of the jury members, the checklist was modified in its final form. The final medical report writing skills included both content and organization writing skills, like using appropriate vocabulary and medical terms, writing adequate supporting ideas, presenting well-structured sentences, using correct grammatical rules,presenting ideas in a logical order, using coherent sentences , and following writing mechanics.These general English writing skills were integrated into the specialized medical reports writing skills: summarizing the patient's history, determining the patient's needed examinations, prioritizing the patient's main problems, diagnosing the patient's condition, identifying the therapeutic goals, writing the patient's treatment plan, and writing the patient's follow-up plan.

Checklist Validity
The checklist content validity was achieved through the jury members who selected the ESP medical report writing skills for freshmen in Physical Therapy College and suggested skills to be included in the checklist, see Appendix (B).

Medical Report Writing Test
Test Aim
The test measured physical therapy freshmen's ESP medical report writing skills.
Test Description
The test consisted of a clinical case study on which students was asked to write a SOAP note, as a form of medical reports. Students read the test instructions before answering (Appendix C).
Test Piloting
On October 18, 2020, the Medical Reports Writing Test was piloted on 20 freshmen in the physical Therapy College in Kafr el-Sheikh university. The test piloting aimed to examine the clarity of the test instructions and its statistical features.
Test Timing
The mean of students' times for answering the test during the test piloting was 60 minutes.

Test Scoring

A scoring rubric was designed based on these criteria:subjective information, objective information, problem identification, assessment of current medical conditions, treatment goals, treatment plans, and follow up plan(Appendix D).The criteria integrated the medical report skills to ESP writing skills. Both content and organization writing skills appeared within the medical report scoring rubric. The total score of each clinical case was 35depended on a (1-5) scale.To avoid bias,two ratersscoredand the statistical analysis depended on the mean scores.

Test Reliability

The test was administeredto20 first year physical therapy students in Kafr el-Sheikh University on October 18, 2021. The Split-Half Coefficient(0.878) was high.

Test Validity

Content validity depended on the jury members who determined the suitability of the assigned clinical case study, clarity of instructions, and precision of the scoring rubric(Appendix C).

The discriminatory validity, the critical ratio (6.236), was statistically significant at (0.01).

Pre-testing

Both resaerch groups were administered the Medical Report Writing Teston October 21, 2021 before the administration of the modified ESP Medical Terms course to identifystudents' levels concerning the targeted medical reports writing skills.

Post-testing

Both research groups were post administered the Medical Report Writing Test on December 28,2021 to examine the effectiveness of the TPACK based ESP course in developing medical therapy students' medical reports writing skills.

The Modified Medical Terms Course

According tothe students' answers in the needs analysis questionnaire, the Medical Termscourse was modified to satisfy such needs. This course was selected as the only ESP course included in the bylaw of Physical Therapy

Faculty. Both content and organization writing skills appeared within the medical reports writing skills. The researchers tried to match students' ESP needs to the course goals. The goals of the modified course were as follows:
-Develop physical therapy students' medical reports writing skills.
-Develop physical therapy students' content and organization writing skills.
-Improve physical therapy students' information technology skills.
-Enable physical therapy students to keep complete and accurate patients' records.
-Establish harmonious relationships between physical therapists and their patients.
-Encourage physical therapy students to write treatment plans.
- Encourage physical therapy students to act as members of health care teams to improve the functions of the patients' body systems.

Course Rationale
The course was introduced online according toMishra and Koehler's (2006) TPACK model. The Technological Pedagogical and Content Knowledge (TPACK) allows for using different technological instruments in designing the ESP different learning experiences and materials. The TPACK based course aimed to develop medical therapy students' medical reports writing skills. The TPACK is used to regulate integrating technology, pedagogy, and educational content. Since the course was administered online, technological facilities were used to assist different teaching strategies and deliver content activities.

Course Content
The content of the course depended mainly on the 'Medical Terms' textbook approved by the Physical Therapy Faculty in Kafr el-Sheikh University. Additional activities were suggested by researchers. The content of the course was operationalized online according to the TPACK model. Sources used in developing the course appeared on Appendix E.

Course Framework
The experimental group were administered ten online lectures using the TPACK framework, each lecture continued for two hours. The first two lectures were orientation on ESP, TPACK, medical reports writing, and SOAP note. Then, students received seven lectures on the seven medical

report writing skills:summarizing the patient's history using adequate supporting ideas, using appropriate medical terms to determine the patient's needed examinations, prioritizing the patient's main problems using well-structured sentences, diagnosing the patient's condition using correct grammatical rules, identifying the therapeutic goals in a logical order, writing the patient's treatment plan using coherent sentences, and writing the patient's follow-up plan using different writing mechanics.

Each skill was related to a specific section of the SOAP note and students assessed their performance according to the rating scale included in the scoring rubric. In the tenth lecture, a clinical case study was introduced where students wrote complete SOAP notes and evaluated them according to the scoring rubric, see Appendix E.

Experimental Procedures

The needs analysis questionnaire was administered to the participants to identify their ESP needs by answering questions on their necessities, lacks, and wants on an ESP course. Results showed that students selected writing as the most important skill to be learnt, and they expected to write medical reports after the ESP course. The research groups were administered the Medical Reports Writing test on October21, 2021.Ten lectures were administered to both research groups: The experimental onedepended on the TPACK model, while the control onereceived the course traditionally. Both research groups were re-administered the medical report writing test on December 28,2021 for data statistical analysis.

Data Analysis

The Statistical Package for Social Science (SPSS) was used in data analysis.Descriptive and inferential statistics were used.The differences between theMedical Reports Writing Test mean scores of the research groupswere calculated by the Independent-Samples t test.

Results and Discussion

The results are discussed according to the research hypotheses.

The First Research Hypothesis

There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the skill of summarizing the patient's history using adequate

supportive ideas in the post administration of the Medical Report Writing Test in favour of the experimental group.

This table displayed the data analysis of this hypothesis:
Table 1
     t Value for the skill of summarizing the patient's history

Skills	Group	N	Mean	Std. Deviation	t value	Sig.	Result
Summarizing the patient's history using adequate supportive ideas	Control	50	2.14	0.729	13.029	0.00	Significant at the 0.01
	Experimental	50	4.28	0.904			

The calculated t (13.029) for the skill of summarizing the patient's historyusing adequate supportive ideas was higher than the tabulated (3.373), and this hypothesis was accepted.

The Second Research Hypothesis
     There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the skill of using appropriate medical terms to determine the patient's needed examinations in the postadministration of the Medical Report Writing test in favour of the experimental group.

The data analysis of this hypothesis is displayed in the following table:
Table 2
        t Value for the skill of using appropriate medical terms

Skills	Group	N	Mean	Std. Deviation	t value	Sig.	Result
Using appropriate medical terms to determine the patient's needed examinations	Control	50	1.98	0.820			
	Experimental	50	4.06	0.998	11.383	0.00	Significant at the 0.01

The calculated t (11.383) for the skill of using appropriate medical terms to determine the patient's needed examinations was higher than the tabulated (3.373), thereforethis hypothesis was accepted.

The Third Research Hypothesis
There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the skill of prioritizing the patient's main problems using well-structured sentences in the post administration of the Medical Report Writing test in favour of the experimental group.

This table presented the data analysis of this hypothesis:
Table 3
     t Value for the skill of prioritizing the patient's main problems using well-structured sentences

Skills	Group	N	Mean	Std. Deviation	t value	Sig.	Result
prioritizing the patient's main problems using well-structured sentences	Control	50	1.88	0.799			
	Experimental	50					
			4.04	0.989	12.014	0.00	Significant at the 0.01

The calculated t (12.014) for the skill of prioritizing the patient's main problems using well- structured sentences was higher than the tabulated t (3.373), hence this hypothesis was accepted.

The Fourth Research Hypothesis
     There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the skill of diagnosing the patient's condition using correct grammatical rules in the post administration of the Medical Report Writing test in favour of the experimental group.

The following table showed the data analysis of this hypothesis:

Table 4

t Value for the skill of diagnosing the patient's condition

Skills	Group	N	Mean	Std. Deviation	t value	Sig.	Result
Diagnosing the patient's condition using correct grammatical rules	Control	50	1.86	0.756			
	Experimental	50					
			3.86	1.050	10.929	0.00	Significant at the 0.01

The calculatedt (10.929) for the skill of diagnosing the patient's condition using correct grammatical rules was higher than the tabulated (3.373), consequently this hypothesis was accepted.

The Fifth Research Hypothesis

There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the skill of identifying the therapeutic goals in a logical order in the   post administration of the Medical Report Writing test in favour of the experimental group.

This table showed the data analysis of this hypothesis:

Table 5

t Value for the skill of identifying the therapeutic goals in a logical order

Skills	Group	N	Mean	Std. Deviation	t value	Sig.	Result
Identifying the therapeutic goals in a logical order	Control	50	1.80	0.728	9.391	0.00	Significant at the 0.01
	Experimental	50	3.60	1.143			

The calculated t (9.391) for the skill of identifying the therapeutic goals in a logical order was higher than the tabulated (3.373), therefore this hypothesis was accepted.

The Sixth Research Hypothesis

There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the skill of writing the patient's treatment plan using coherent sentences in the post administration of the Medical Report Writing test in favour of the experimental group.

The data analysis of this hypothesis appears in the following table:

Table 6

t Value for the skill of writing the patient's treatment plan using coherent sentences

Skills	Group	N	Mean	Std. Deviation	t value	Sig.	Result
Writing the patient's treatment plan using coherent sentences	Control	50	1.76	0.744	8.146	0.00	Significant at the 0.01
	Experimental	50	3.38	1.193			

The calculated t (8.146) for the skill of writing the patient's treatment plan using coherent sentences was higher than the tabulated (3.373), thus this hypothesis was accepted.

The Seventh Research Hypothesis

There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the skill of writing the patient's follow-up plan using different writing mechanics in the post administration of the Medical Report Writing Test in favour of the experimental group.

This table displayed the data analysis of this hypothesis:

Table 7
 t Value for the skill of Writing the patient's follow-up plan

Skills	Group	N	Mean	Std. Deviation	t value	Sig.	Result
Writing the patient's follow-up plan using different writing mechanics	Control	50	1.56	0.644			
	Experimental	50					
			3.26	1.291	8.334	0.00	Significant at the 0.01

The calculated t (8.334) for the skill of writing the patient's follow-up plan using different writing mechanics was higher than the tabulated (3.373), therefore the hypothesis was accepted.

The Eighth Research Hypothesis
 There was a statistically significant difference between the mean scores of the control and experimental groups at ($\alpha \leq 0.01$) level of significance in the overall medical reports writing skills in the post administration of the Medical Report Writing Test in favour of the experimental group.

The data analysis of this hypothesiswas presented in the following table:

Table 8
t Value for the overall medical report writing skills

Skills	Group	N	Mean	Std. Deviation	t value	Sig.	Result
Overall medical report writing skills	Control	50	12.98	4.800	11.135	0.00	Significant at the 0.01
	Experimental	50	26.48	7.103			

The calculated t (11.135) for the overall medical report writing skills
was higher than the tabulated (3.373), so this hypothesis was accepted.

To calculate the effect size for the TPACK based ESP course on the
medical reports writing skills, Eta square ($\eta2$) and Cohen's (d) were
calculated using t value for the differences between means as displayed in
this table:

Table 9

The effect size for the TPACK based ESP course on the medical reports writing skills

Skills	Test	Mean	Std. Deviation	t-Value	*d*		Cohen's	Eta (η^2)	square
Overall medical reports writing Skills	Pre	8.86	2.365		Value	Effect size		Value	Effect size
	Post	26.48	7.103	17.722	3.176	Huge		0.865	Huge

The effectiveness of the TPACK based ESP course in developing freshmen's medical report writing skills was calculated byThe Modified Blake's Gain Ratioas shown in this table:

Table 10

Effectiveness of the TPACK based ESP course in developing medical report writing skills

Skills	Pre-Mean	Post-Mean	Max-Score	Blake's gain ratio	Effectiveness
The TPACK based ESP course	8.86	26.48	35	1.17	Exist

The value of Blake's modified gain ratio(1.33) for the TPACK based ESP course revealed its effectiveness . It existed in Blake's range of effectiveness (1-2).Hence,The TPACK based ESP course was effective in developingfreshmen's medical report writing skills.

Discussion of Results

As previously discussed, the TPACK based ESP course was effective in developing physical therapy freshmen's medical report writing skills . The effect size values for the TPACK based ESP course (d=3.176) and (η^2=0.865) were large. The calculated t value for each medical report writing skill was higher than the tabulated value (3.373). The sequence of the developed medical report writing skill was: Summarizing the patient's

history using adequate supporting ideas(13.026), prioritizing the patient's main problems using well-structured sentences (12.014),using appropriate medical terms to determine the patient's needed examinations(11.383), diagnosing the patient's condition using correct grammatical rules(10.050), identifying the therapeutic goals in a logical order(9.391), writing the patient's follow-up plan using different writing mechanics(8.334), and writing the patient's treatment plan using coherent sentences(8.146).

The high degrees in the skill of summarizing the patient's history using adequate supporting ideas reveals the simplicity of the skill that depends on the narration of the patient or a relative. The low degrees in the skill of writing the patient's treatment plan using coherent sentences can be attributed to the difficulty of differentiating between coordinate and subordinate sentences. They felt it difficult to determine whether the two sentences had equal ideas or an idea had more weight than the other.

Integrating The TPACK based model with SOAP enabled students to write comprehensive medical reports. Students used content as well as organization skills in their medical reports. They wrote a topic sentence while writing a summary of the patient's history. The summary is also supported by relevant and adequate idea. They used extensive vocabulary and medical terms to express the patient's needed examinations. Capitalization, punctuation, spacing, and other writing mechanics were followed while writing the medical reports. Students focused on using correct grammar and were encouraged to use different well- structured sentences, simple, complex, and compound sentences. The treatment and follow up plans consisted of introduction, body, and conclusion.
The TPACK integrated technology, pedagogy, and content knowledge. Different technological facilities were used during the COVID pandemic, like Microsoft Teams, Google, YouTube, What's App, Messenger, and Mind maps digital tools. Based on the needs analysis questionnaire, students preferred to work in groups and the modified ESP course administered in this research depended on different cooperative learning strategies, such as discussion, talking triad , inquiry based learning, think aloud , fish bowl, reciprocal teaching, and Jigsaw strategies. Such group teaching strategies were used through the technological platform Microsoft

teams to overcome the feeling of isolation and enhance the social interaction among students. The content knowledge focused on the medical report writing skills appeared in a SOAP note written by each student. Students' SOAP notes displayed general English writing skills integrated with the medical reports writing skills.

ImplicationsforPractice

There aresignificant implications for practice, particularly for those involved in teaching ESPcourses. The use of TPACK principles in designing and delivering ESP courses can enhance learning, especially in the pandemic. This research showed the specific needs of students, thereby increasing their engagement and achievement. It revealed that aTPACK-based ESP course significantly improved the medical report writing skills of physical therapy students. This highlights the potential for ESP instructors to adopt TPACK principles in designing courses that address students' needs to increase their engagement and achievement.

   This research underscores the importance of using technology in ESP instruction, as TPACK is grounded in effective integration of technology, content, as well as pedagogy. During the pandemic, when traditional teaching methods may not be feasible, the use of technology helps in delivering effective and engaging instruction. Therefore, instructors can incorporate TPACK principles to integrate technology into their ESP courses to ensure that students receive quality instruction that meets their needs.

Limitations:

The limitations of this research should be considered when interpreting the results. One of the limitations is the small number of the participants, which may affect the generalizability of the findings. Although the participants were randomly selected, the results may not be representative of all physical therapy students, especially those from other institutions or countries. Additionally, the research was carried out in a controlled environment, and the results may differ in real-life situations where students may have access

to different resources and support.Another limitation is that the research only measured the effectiveness of the TPACK-based ESP course in improving medical report writing skills. Further research should investigate the long-term effects of the course on the students' overall English proficiency and academic performance.

Suggestions for Future Research:

There arevarious opportunities for future research. Firstly, future studies could explore the effectiveness of TPACK-based ESP courses in other fields beyond physical therapy, such as engineering, business, or law. This would provide a better view of the generalizability of the TPACK framework in different contexts.

Secondly, future research could investigate the effects of different TPACK components on learner achievement. This research focused on the effective integration of technology, content, and pedagogy. Future research could investigate the relative contribution of every component in enhancing learning outcomes in ESP courses.

Lastly, further research could investigate the potential of TPACK-based ESP courses in blended and online learning environments. With the increasing use of technology in education, blended and online learning have become prevalent. Therefore, it is essential to investigate the effectiveness of TPACK-based ESP courses in these settings, which can offer insights concerning the design and delivery of effective ESP instruction.

Conclusions

There was a paucity of research on using a TPACK based ESP course to develop physical therapy students' medical reports writing skills. The research resultsaligned to those of Egilsdottir et al.(2022) who revealed the effect of a TPACK based clinical course,in the COVID 19 pandemic, on developing the achievement ofnursing students. Also, the results were similar to those of Lytovchenko and Voronina (2020) who proved that MOOCs were acceptable learning tools for ESP courses during quarantine since the current TPACK based ESP course was also introduced online during the COVID pandemic.

Recommendations and Suggestions for Further Research:

-Increasing the number of ESP courses for physical therapy students.

-Examining the effectiveness of a TPACK based ESP course in developing physical therapy students' electrotherapy skills.

-Investigating the effect of flipped classrooms in developing medical therapy students' ESP reading skills.

- Exploring the effectiveness of a TPACK based ESP course in developing physical therapy students' satisfaction towards online learning.

-Measuring the effectiveness of modifying the Test and Measurement Course according to the TPACK in physical therapy student's achievement.

References

Akturk, A. & Ozturk, S. (2019). Teachers' TPACK levels and students' self efficacy as

predictors of students' academic achievement. *International Journal of Research in*

Education and Science (IJRES), 5(1), 283-294.

https://files.eric.ed.gov/fulltext/EJ1197990.pdf

Alsamadani,H.(2017).Needs analysis in ESP context: Saudi engineering students as a case

study. *Advances in Language and Literary Studies, 8(*6),58-70.

https://files.eric.ed.gov/fulltext/EJ1165016.pdf

Andrus,M., McDonough,S., Kelley,K., Stamm,P., McCoy,E., Lisenby,K., Whitley,H.,

Slater,N., Carroll,D.,&Hester,K.(2018). Development and Validation of a Rubric to

Evaluate Diabetes SOAP Note Writing in APPE. *American Journal of Pharmaceutical*

Education, 82 (9) e 6725.https://doi.org/10.5688/ajpe6725

Agarwal, J., Maheshwari,S. Agrawal, A., Naithani,M, &Pant,M.(2022).Medical education in

COVID period –student feedback and experiences. *Asian Journal of Medical Sciences*,13(6),28-34. DOI: https://doi.org/10.3126/ajms.v13i6.43095

Arshad,S., Shirazi,B., Masood,Z., &Muzaffar,L.,(2015).Daily follow up notes accuracy

according to SOAP (Subjective, Objective,Assessment, Plan) format. *Khyber Med Univ.*

Journal ,7(2), 68-71.

Archambault, L., & Barnett, J. (2010). Revisiting technological pedagogical content

knowledge: Exploring the TPACK framework. *Computers & Education*, *55*(4), 1656-1662.

https://doi.org/doi:10.1016/j.compedu.2010.07.009

Avdic,A., Marovac,U.,&Jankovic,D.(2020). Automated labelling of terms in medical reports

in Serbian. *Turkish Journal of Electrical Engineering & Computer Sciences,28*,3285-3303.

https://doi.org/doi:10.3906/elk-2002-9

Barnett, S., Gallimore,C.,Kopacek,K., and Porter,A.(2014). Evaluation of electronic SOAP

note grading and feedback. *Currents in Pharmacy Teaching and Learning,6*(4),516-526.

Beriswill, J. E., Bracey, P. S., Sherman-Morris, K., Huang, K., & Lee, S. J. (2016). Professional

Development for Promoting 21st Century Skills and Common Core State Standards in

Foreign Language and Social Studies Classrooms. *TechTrends,60*(1), 77-84. http://dx.doi.org/10.1007/s11528-015-0004-5

Bhadra A., Mukherjee A., &Sarkar K.(2021). Impact of population density on Covid-19

infected and mortality rate in India. *Modelling Earth Systems and Environment,7*(1),623-

629.https://link.springer.com/article/10.1007/s40808-020-00984-7

Brown, A., & Green, T. (2016). *The essentials of instructional design: Connecting fundamental*

principles with process and practice. Routledge.

Carolan C., Davies C., Crookes P., McGhee S., &Roxburgh M. (2020).COVID-19: Disruptive

impacts and transformative opportunities in undergraduatenurse education. *Nurse*

EducationPractice, 46. https://doi.org/ 10. 1016/j. nepr. 2020. 102807.

Chan,S., Mamat,N., &Nadarajah,V.(2022). Mind your language: The importance of English

language skills in an International Medical Programme (IMP). *BMC Medical Education,*

22,405,1-7.https://doi.org/10.1186/s12909-022-03481-w

Chan, A., Saeteaw, M., Chui, W. K., & Lee, J. Y. C. (2016). Perceptions of pharmacy students

and pharmacists on SOAP note education and utility in pharmacy practice. *Currents in*

Pharmacy Teaching and Learning, 8(1), 77–82. https://doi.org/10.1016/j.cptl.2015.10.001

Chet, C., Sok, S.,& Sou, V. (2022).The antecedents and consequences of study commitment

to online learning at Higher Education Institutions (HEIs) in Cambodia. *Sustainability ,*
14(6), 1-43.**https://doi.org/10.3390/su14063184**

Choi, L.(2021).Implementing English for Medical Purposes (EMP) in South Korea: Nursing
students' ongoing needs analysis. *Nurse Education Today Journal*,1-7. https://doi.org/10.1016/j.nedt.2021.104989

Dolan R., &Broadbent P.(2016). A quality improvement project using a problem based post
take ward round proforma based on the SOAP acronym to improve documentation in acute
surgical receiving. *Ann Med Surg (Lond)* ,5, 45-
48. https://doi.org/10.1016/j.amsu.2015.11.011

Ebersole, L (2019). Preservice teacher experience with technology integration: How the
preservice teacher's efficacy in technology integration is impacted by the context of the
preservice teacher education program. *International Dialogues on Education, 6*(2), 124-
138. https://doi.org/10.53308/ide.v6i2.64

Egilsdottir,H., Heyn1,L., Brembo,E., Byermoen,K., Moen,A.,&Eide,I.(2022).The value of a
redesigned clinical course during COVID-19 pandemic: An explorative convergent mixed-
methods study. *BMC Nursing, 21(94),*1-19.https://doi.org/10.1186/s12912-022-00872-8

Estopà,R., López-Fuentes,A., Porras-Garzón,J.(2020). Terminology in written medical
   reports: A proposal of text enrichment to favour its comprehension by the patient.
Proceedings of the 6th International Workshop on Computational Terminology, 43–49.
Marseille, France. European Language Resources Association. https://aclanthology.org/2020.computerm-1.6

Falcón, M., and Basagoiti, I. (2012). El paciente y la AlfabetizaciónenSalud. *Alfabetización*
ensalud: de la información a la acción Valencia. Itaca/TBS.

Finch, A., 2014. Caring in English: ESPfor nurses. *International Journal of English Language*

Teaching, 1 (1), 1–10. https://doi.org/10.5430/ijelt.v1n1p1

Flowerdew, L. (2013). Needs Analysis and Curriculum Development in ESP. In B.

Paltridge& S. Starfield (Eds.),*The Handbook of English for Specific Purposes*(pp.325-

346).Wiley Blackwell.

Gogineni, H., Aranda, J., &Garavalia, L.(2019). Designing professional program instruction to

align with students' cognitive processing. *Curr Pharm Teach Learn, 11*(2),160-165.

https://doi.org/10.1016/j.cptl.2018.11.015

Gómez-Trigueros, I.,&Yáñez de Aldecoa, C. (2021).The digital gender gap in teacher

education: The TPACK Framework for the 21st century.*European Journal of Investigation in Health Psychology and Education, 11*(4):1333-1349.**https://doi.org/10.3390/ejihpe11040097**

Gondi S., Beckman A., Deveau N., Raa,A.,Ranney,M., Popkin,R., &He,S.(2020). Personal

protective equipment needs in the USA during the COVID-19 pandemic. *Lancet,*

395(10237), 90-91.https://doi.org/ 10.1016/S0140-6736(20)31038-2

Górska-Poręcka, B.(2013). The role of teacher knowledge in ESP course design. *Studies in*

Logic, Grammar and Rhetoric, 34 (1),27-42. https://doi.org/10.2478/slgr-2013-0021

Huang, R., Liu, D., Tlili, A., Knyazeva, S., Chang, T. W., Zhang, X., Burgos, D., Jemni, M.,

Zhang, M., Zhuang, R., &Holotescu, C. (2020). *Guidance on Open Educational Practices*

during School Closures: Utilizing OER under COVID-19 Pandemic in line with UNESCO

OER Recommendation. Beijing: Smart Learning Institute of Beijing Normal University.

Hubber,P.&Loong,E.(2013). Increasing learner engagement of learning technologies and

science TPACK through representational challenges.In C. Wankel, P. Blessinger, J.,&

 N. Stanaityte(Eds.),Washington Increasing Learner Engagement of Learning Technologies and Science TPACK through Representational Challenges: WEB 2.0 and

Blended Learning Technologies(pp.83-112). Emerald Group Publishing Limited.

Hutchinson, T. (1987). What's underneath? An interactive view of materials evaluation. In L.

E. Sheldon (Ed.), *ELT textbooks and materials: problems in evaluation and development*

(37-44).Modern English Publications.

Jong,K.,&Perdomo,B.(2016).Basis and application of an ESP course for dental students. *The*

Journal of Teaching English for Specific and Academic Purposes, 4(2),351-359.

http://espeap.junis.ni.ac.rs/index.php/espeap/article/view/298

Kazu,I.&Erten,P. Teachers' technological pedagogical content Knowledge self efficacies.

Journal of Education and Training Studies, 2(2), 126–144, 2014. https://doi.org/10.1111 4/jets.v2i2.261

Kim, S. (2017). Technological, Pedagogical, and Content Knowledge (TPACK) and beliefs of

preservice secondary mathematics teachers: Examining therelationships. *EURASIA*

Journal of Mathematics, Science, and TechnologyEducation, 14(10), em1590.https://doi.org/10.29333/ejmste/93179

Koch LF.(2014). The nursing educator's role in e-learning: A literature review. *Nurse Educ*

Today,34(11),1382–1387. https:// doi. org/ 10. 1016/j. nedt.2014. 04. 002.

Lawrence C., Mhlaba, T., Stewart ,K., Moletsane, R., Gaede, B., Moshabela, M. (2018). The

hidden curricula of medical education: A scoping review. *Academic Medicine,93*:648–

656.https://doi.org/ 10.1097/ACM.0000000000002004

Li, Q., &Xinghua, H.(2014). Research on narrow context ESP course design in adult education.
Proceedings of The International Conference on Education, Language, Art and
Intercultural Communication,153-158.
https://doi.org/10.2991/icelaic-14.2014.33
Lodhi,M., Shamim,M., Robab,M. Shahzad,S.,&Ashraf,A.(2018). English for Doctors: An
ESP Approach to Needs Analysis and Course Design for Medical Students. *International*
Journal of English Linguistics,8(5),205-215.**https://doi.org/**10.5539/ijel.v8n5p205
Lytovchenko, I., & Voronina, H. (2020). MOOC as Remote ESP Learning Tool at University
in Quarantine: Focus on Students' Attitudes.
RevistaRomaneascapentruEducatie
Multidimensionala, 12, 70-76.https://doi.org/10.18662/rrem/12.2Sup1/291
Miguel-Revilla, D.,Martinez-Ferreira, J.,&Sanchez-Agusti, M.(2020). Assessing the digital
competence of educators in social studies: An analysis in initial teacher training using the
TPACK-21 model. *Australian Journal of Educational Technology, 36*(2), 1–12. https://doi.org/10.14742/ajet.5281
Mihai, M. Albert, C.,Mihai, V., Dumitras, D.(2022).Emotional and Social Engagement in the
English Language Classroom for Higher Education Students in the COVID-19 Online
Context. *Sustainability, 14*(4527),1-20.https://doi.org/10.3390/su14084527
Morrison, K. (2019). Perceptions of the impact of quality professional development on the
sustainability of a one-to-one computing initiative at the high school level. *Journal on*
School Educational Technology, 14(4), 17–36.
Mukhtar K, Javed K, Arooj M., &Sethi A. (2020). Advantages, limitations and recommendations for online learning during COVID-19 pandemic era. *Pakistan Journal*

*of Medical Sciences,*36, 27-31.https://doi.org/10.12669/pjms.36.COVID19-S4.2785

Mulyadi , D., Wijayatingsih ,T., Budiastuti ,R., &Ifadah ,M.(2020).Technological
Pedagogical and Content Knowledge of ESP Teachers in Blended Learning Format.
Ijet,15(6),124-138.https://doi.org/10.3991/ijet.v15i06.11490

Nguyen,T., Wong,E., Wang,Z., Goldberg,T.(2019). SOAP Notes during APPEs: Assessment
of student performance. *Journal of Pharmacy Practice, 34*(4) 665-668.
https://doi.org/10.1177/0897190019885274

Okabe-Miyamoto K., Folk, D., Lyubomirsky S., Dunn E.(2021). Changes in social
connection during COVID-19 social distancing: It's not (household) size that matters, it's
who you're with. *Plos one,16*(1):e0245009https://doi.org/10.1371/journal.pone.0245009

Pettersson, L.(2018). Mobile-Assisted Learning and Higher-Education ESP. *English for
Physiotherapy,60*(1),81-94 DOI:10.2478/linpo-2018-0006

Podder, V.,Lew, V., &Ghassemzadeh, S. (2021). *SOAP notes.*StatPearlsPublishing.
https://www.ncbi.nlm.nih.gov/books/NBK482263/

Rafi, A., Varghese, P.,&Kuttichira, P. (2020).The pedagogical shift during COVID 19
pandemic: online medical education, barriers and perceptions in central Kerala. *Journal of
Medical Education and Curricular Development,7*,1-4.
https://doi.org/10.1177/2382120520951795

Rajab, H., Gazal A., AlkattanK.(2020). Challenges to online medical education during the
COVID-19 pandemic. *Cureus,2*,12(7)
e8966.12.https://doi.org/10.7759/cureus.8966

Richards, J. C., & Schmidt, R. W. (2013). *Longman dictionary of language teaching and
applied linguistics.* London: Longman.

Rivkin A. (2016). Thinking Clinically from the beginning: Early introduction of the

pharmacists' patient care process. *Am J Pharm Educ*.,*80*(10),164-174. https://doi.org/ 10.5688/ajpe8010164

Rosenberg, J. ,& Koehler, J. (2015). Context and technological pedagogical content

knowledge (TPACK): A systematic review. *Journal of Research on Technology in*

Education, 47(3), 186-210.https://doi.org/10.1080/15391523.2015.1052663

Shachar, M., & Neumann, Y. (2003). Differences Between Traditional and Distance Education

Academic Performances: A Meta-Analytic Approach. *The International Review of*

Research in Open and Distributed Learning, *4*(2). https://doi.org/10.19173/irrodl.v4i2.153

Sando K., Skoy E., Bradley C., Frenzel J., Kirwin J., &UrteagaE.(2017). Assessment of SOAP

note evaluation tools in colleges and schools of pharmacy. *Curr Pharm Teach Learn,9*(4),576-584. https://doi.org/10.1016/j.cptl.2017.03.010

Santiago L., &Neto I.(2016). SOAP Methodology in General Practice/Family Medicine

Teaching in Practical Context. *Acta Med Port. 30,29(12)*,854-859. https://doi.org/ **https://doi.org/10.20344/amp.8405**

Seo, J., Kong H., Im S., Roh H., Kim D., Bae H., Oh, Y.(2016). A pilot study on the evaluation

of medical student documentation: assessment of SOAP notes. *Korean J Med Educ.,28*(2):237-41. https://doi.org/ 10.3946/kjme.2016.26

Shulman, L. (1986). *Those who understand: Knowledge growth in teaching*. Educational

Researcher.

Stone, R., Cooke, M., & Mitchell, M.(2020). Undergraduate nursing students' use of video

technology in developing confidence in clinical skills for practice: A systematic integrative

literature review. *Nurse Education Today, 84*, e104230.https://doi.org/10.1016/j.nedt.2019.104230

Stoyanova, D. (2021). Designing ESP courses: Principles & specificities. *Professional*

Discourse & Communication, 3(1),62-74.https://doi.org/10.24833/2687-0126-2021-3-1-   62-74

Tang, Y., Chau,K.,Ki, A.,Chau,K.,Kwok,A., Zhu,T., &Ma,X.(2022).A systematic review of

immersive technology applications for medical practice and education - Trends, application areas, recipients, teaching contents, evaluation methods, and performance.

Educational Research Review 35 ,1-22.

https://doi.org/10.1016/j.edurev.2021.100429

Tseng,J.(2018). Exploring TPACK-SLA interface: Insights from the computer-enhanced

classroom. *Comput. Assist. Lang. Learn., 31*(4), 390–412,

https://doi.org/10.1080/09588221.2017.1412324

Viana, V., Bocorny, A.,&Sarmento, S. (2019). *Teaching English for Specific Purposes*. TESOL Press.

Voithofer, R., Nelson, M. J., Han, G., & Caines, A. (2019). Factors that influence TPACK

adoption by teacher educators in the US. *Educational Technology Research and Development, 67*(6), 1427-1453. https://doi.org/10.1177/0022487120949842

Wangmo,T., Tharsni. M., Saif,R., Lalrinchhani,C.(2021). Needs analysis in ESP for medical

student: A course to enhance academic presentation skills.*IJRAR,8*(3), 923-934

Wichadee, S.(2017). A development of the blended learning model using Edmodo for

maximizing students' oral proficiency and motivation. *Emergent Technological Learn,12*(2),137-154.https://doi.org/10.3991/ijet.v12i02.6324

Yeh, Y., Chan, K.,& Hsu, Y.(2021). Toward a framework that connects individual TPACK

and collective TPACK: A systematic review of TPACK studies investigating teacher

collaborative discourse in the learning by design process. *Computer Education, 171*, 104–

238. http://dx.doi.org/10.1016/j.compedu.2021.104238