INTEGRATED WRITING IN DIFFERENTIATED ESP COURSE AT TECHNICAL UNIVERSITY

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Abstract
The current study aims to investigate the effectiveness of teaching integrated writing using differentiated tasks in an ESP university course. The mixed research method was used in the study. Eighty IT students of Igor Sikorsky Kyiv Polytechnic Institute voluntarily took part in the study in the 2022-2023 academic year. The integrated writing involved reading-writing, listening-writing, and reading-listening-writing tasks. The differentiation according to the level of foreign language proficiency and the learning style of IT students was implemented. The results showed that the percentage of IT students who improved their integrated writing skills due to the differentiation of foreign language proficiency level and the learning style in the first group was bigger than in the second one. It was concluded that teaching integrated writing with a focus on learners' differentiation is a means of simultaneous development of reading-writing, listening-writing, and reading-listening-writing skills in the professional context. It also helps to diversify ESP instruction at technical universities.

Keywords: differentiated ESP instruction, integrated writing, listening-writing skills, reading-writing skills, reading-listening-writing skills

Introduction

Information technology (IT) professionals with a variety of skills ranging from technical to communicative ones are in great demand in the IT industry today. To prepare competitive specialists for the rapidly evolving IT field, educators should look for ways to foster these skills in IT students, and one of the disciplines that play a key role in this is English for specific purposes (ESP). The development of professional written communication skills is a complex task that can be solved by means of differentiation and integration in the educational process.

Differentiation as an effective way of enhancing ESP learning is particularly appropriate in large and heterogeneous (mixed ability) groups. It aims to improve IT students' foreign language communicative competence for finding professional solutions in the IT field. Essentially, a mixed-ability ESP class is made up of students with different language levels and learning styles. Thus, taking the

mentioned types of differentiation into consideration can give ESP teachers a number of benefits.

On the one hand, knowing the students' language level allows ESP educators to evaluate their functional language ability, define their personal learning trajectories, differentiate groups by adjusting to learners' minimum and maximum abilities, and optimize work in large multilevel groups. In Ukraine, students are expected to have a B1 level of foreign language proficiency, according to CEFR (2018), to enter a university and a B2 level when graduating from a bachelor's degree program. Rarely in a group are IT students with A2 or C1 levels. Foreign language proficiency levels can vary from group to group, ranging predominantly from B1 to B2. Thus, the focus on the levels of foreign language proficiency optimally takes into account the needs of individuals and the group as a whole.

The learning style as a "multi-aspect construct in which each aspect mirrors certain specifics of an individual" (Synekop, 2020) determines "how – and how well – our students learn a foreign language" (Oxford, 2003, p. 1). It is chiefly "the manner in which individuals choose to or are inclined to approach a learning situation" (Cassidy, 2004, p. 420). According to Arif, Danial, and Nurhaeni (2021), the learning style is a student's "preference" for "collecting, processing, and understanding information" (p. 401) in the learning environment.

The multidimensionality of the learning style in ESP learning is founded on the four essential aspects: motivational, cognitive, social, and regulative. The motivational aspect serves as "the internal engine of stimulating behavior for satisfying the needs and achieving the aims in the process of learning ESP" (Nikolaeva & Synekop, 2020a, p. 171). The cognitive aspect is focused on the learners' mental processes, which are directed toward the perception and processing of information (Oxford, 2003; Synekop, 2018). Awareness of the social aspect of language learning style ensures dynamic communication by exchanging information, experience, and knowledge between interlocutors (Nikolaeva & Synekop, 2020b). In addition, efficient development of language skills depends on the learner's regulation. This involves being flexible and adaptable, organised, self-disciplined, motivated, and able to control emotions (Synekop, 2020). Thus, the success of the educational process relies on the differentiation of learning styles that emphasise the individual preferences of learners.

In addition to differentiation, "the integration of language comprehension and production is receiving increasing attention from researchers" (Zhang, 2016, p. 2). Plakans, Liao and Wang (2018) "conceptualize language as holistic or skills as integrated" (p. 430). For that reason, writing tasks are often integrated with reading, listening, or speaking (Hinkel, 2006).

Integrated writing is a skill that goes beyond simply combining listening, reading, and writing (Liao, Zhu, & Cheong, 2021). According to Liao, Zhu, and Cheong (2021), independent writing has shown the strongest correlation with integrated writing. Both independent listening and independent writing have direct and indirect effects on integrated writing performance. In contrast, the effect of reading on integrated writing performance is insignificant, even though there is a significant correlation between the two (Liao, Zhu, & Cheong, 2021).

Graham and Herbert (2011) argue that "one potential means for improving students' reading is writing." They add "that writing about material read improves students' comprehension of it; that teaching students how to write improves their

reading comprehension, reading fluency, and word reading; and that increasing how much students write enhances their reading comprehension" (p. 710). Also, Ye and Liu (2023), in their research on the reading-writing link in EFL integrated writing, find that reading monitoring is the only factor that has a direct and significant impact on skill integration.

The study of Yang and Plakans (2012) shows that an integrated writing task requires not only comprehension and production abilities but also regulation skills for managing reading, listening, and writing interactions. Furthermore, their results reveal that the use of integrated writing strategy was a multifaceted construct consisting of three factors: self-regulatory strategy, discourse synthesis strategy, and "test-wiseness" strategy. Moreover, a self-regulatory strategy has executive control over other types of strategy use (p. 80).

Another interesting research focus is the differences in the written discourse between the independent and integrated prototype tasks (Cumming et al., 2005). Cumming et al. (2005) found that "the integrated writing tasks differed significantly from the discourse produced in the independent essay for the variables of lexical complexity, syntactic complexity, rhetoric, and pragmatics" (p. 5). The study of Machili, Papadopoulou, and Kantaridou (2019) indicates the positive impact of explicit strategy instruction on EFL students' video-mediated integrated writing performance. They also emphasize the usefulness and feasibility of incorporating video into the teaching and assessment of integrated writing in the context of EAP (p. 1). All these findings point to two things: 1) integrated writing is a skill that goes far beyond the simple combination of listening, reading, and writing (Liao, Zhu, & Cheong, 2021); 2) positive interconnection of writing with reading and listening for academic purposes is evident.

The primary objective of the present investigation was to examine the efficacy of instructing integrated writing within a differentiated ESP course at a technical university. Specifically, the research aims to address a gap in teaching integrated writing in the context of differentiated ESP instruction. In pursuit of this objective, the study addressed the following research questions:

1. What are the advantages of the incorporation of integrated writing tasks within the professional domain?
2. What specific skills do students need to focus on when engaging in integrated writing tasks?
3. What pedagogical conditions are the most beneficial for teaching integrated writing within the academic framework?

Method
Research design

The mixed research method was employed in this study, as it provided a comprehensive approach to address the study objectives. The quantitative component allowed us to determine the effectiveness of teaching integrated writing through differentiation by English proficiency level and learning style, thereby providing an objective measure of the impact of the instructional approach. The qualitative component, on the other hand, enabled us to analyze the experimental results and provide recommendations for the organization of integrated writing in differentiated ESP instruction, offering a deeper understanding of the practical applications of our findings. This mixed research method was appropriate to the

complexity of our research objectives. It provided both statistical evidence and contextual insights that can inform teaching practice in technical universities.

Participants

The study involved 80 fourth-year students from the Educational and Scientific Physics and Technology Institute of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute," who participated voluntarily in the 2022-2023 academic year.

In both groups, the participants were differentiated according to their English language levels in the research. Additionally, during the differentiated ESP instruction, the IT students determined their learning styles. The gender of the experimental participants was not taken into account. Because the vast majority of participants were males (75), both categories of learners completed the same tasks.

The students' interests were focused on information technologies, particularly cybersecurity, which was relevant to their current coursework. The 4th year was chosen for the study as IT students had already had some experience in their professional field. Additionally, the 4th year is considered a more challenging level for integrated writing in terms of ESP courses, as it requires integrating language and professional skills from multiple topics, providing a comprehensive picture of their abilities.

Procedure

The research procedure involved the following stages (Table 1):

Table 1. Research stages and their content

Stage	Content of the stages
1st stage	Pre-test. Aim: defining the levels of English language proficiency.
2nd stage	Aim: formation of two experimental groups according to types of differentiation.
3rd stage	Differentiated ESP instruction. Aim: Developing integrated writing skills in conditions of differentiation.
	1. The first experimental group: Differentiation of the tasks according to the students' English proficiency levels and learning styles (dominant and reserved). Defining the learning styles of IT students using Oxford's Style Analysis Survey (1996).
	1st phase involves the reading-writing and listening-writing tasks for different IT students according to their dominant types of sensory modality (visual, auditory or kinesthetic), the predominant way of processing information (analytic or synthetic). The complexity of the tasks corresponded to the defined levels of students' language proficiency (B1 and B2). There was also a separate group of tasks with scaffolding for improving such writing skills as information compression, compensation, paraphrasing, and generalisation.
	2nd phase involves "the zone of proximal development" (Vygotsky, 1986, p. 187), with the reading-writing and listening-writing tasks to develop the students' reserved type of sensory modality and way of processing information through scaffolding. There were differentiated tasks with scaffolding for improving the language level, tasks with scaffolding for improving writing skills, such as information compression, compensation, paraphrasing, generalisation, and additional reading-listening-writing tasks.

Stage	Content of the stages
	3rd phase involves the improvement of all the obtained skills, the mixture of reading-writing, listening-writing, and reading-listening-writing tasks.
	2. *The second experimental group*: Differentiation of the tasks was based on the students 'English proficiency levels.
	1st phase involves the complexity of the reading-writing and listening-writing tasks corresponded to IT students' levels of language proficiency. There was a set of exercises with scaffolding for enhancing IT students' skills in condensing information, filling gaps in meaning, and rephrasing ideas.
	2nd phase involves "the zone of proximal development" (Vygotsky, 1986, p. 187), enhancing the learner's level in the performance of the reading-writing, listening-writing and reading-listening-writing tasks with scaffolding. Additionally, tasks with scaffolding were used for the development of writing skills, such as information compression, compensation, paraphrasing, and generalisation.
	3rd phase involves the improvement of all the obtained skills, the mixture of reading-writing, listening-writing and reading-listening-writing tasks.
4th stage	Post-test. Aim: Determining the level of English language proficiency and the effectiveness of teaching integrated writing using the differentiated approach.

The detailed procedure for the differentiated ESP instruction is as follows. ***In the first stage***, IT students were offered a pre-test to determine the levels of their English language proficiency in accordance with CEFR (Common European Framework of Reference for Languages: Learning, Teaching and Assessment, 2018). The test involved three tasks on integrated writing (reading and writing; listening and writing; reading, listening and writing), each graded with 10 points. The maximum point for the whole test was 30. Points 30-25 indicated B2 (Upper Intermediate) level and points 24-19 indicated B1 (Intermediate) level.

The integrated writing (reading-writing, listening-writing, reading-listening-writing) was assessed according to the following criteria in Table 2 (Synekop, 2019, p. 15):

Table 2. Integrated writing criteria and descriptors

Criteria	Descriptors
relevance of content	2 points – the content fully accords with the professional situation and the topic of text(s) for reading and / or listening; fully reflects the concise information of texts for reading and listening; the full range of techniques as compression, compensation, paraphrasing, generalization, is correctly used;
	1 point – the content mainly accords with the professional situation and the topic of text(s) for reading and / or listening; mainly reflects brief information of texts for reading and listening (one-two aspects of the text content are not taken into account); a wide range of techniques as compression, compensation, paraphrasing, generalization, is mainly correctly used;
	0 points – the content minimally accords with the professional situation and the topic of the text(s) for reading and / or listening; minimally reflects the concise information of the text(s) for reading and / or listening (three or more aspects of the content of text(s) are not taken

Criteria	Descriptors
	into account or incorrectly stated); a range of techniques as compression, compensation, paraphrasing, generalization, is minimally used);
organization and cohesion	2 points – the text is correctly structured, logical and coherent; linking words are chosen correctly; 1 point – the text is on the whole correctly structured, logical and coherent; some inaccuracies in the choice of linking words are evident, but they do not interfere with the understanding of information; 0 points – the text is not properly structured, logical and coherent; significant inaccuracies in the choice of linking words are evident, they greatly complicate the understanding of information);
relevance of grammar and vocabulary	2 points – the text demonstrates the correct choice of grammatical structures and appropriate words; is characterized by adherence to grammatical correctness, variability in the use of words and grammatical structures, has no lexical / grammar / punctuation mistakes; demonstrates adherence to stylistic norms in full; 1 point – the text demonstrates mostly correct choice of grammatical structures and appropriate words; is characterized mainly by grammatical correctness, a fairly wide range of words and grammatical structures; has few (1-3) lexical / grammatical / punctuation mistakes that do not affect the perception and comprehension of the text; mostly demonstrates adherence to stylistic norms; 0 points – the text demonstrates a minimally correct choice of grammatical structures and words; is characterized by minimal grammatical correctness, limited use of appropriate words and grammatical structures; has four or more lexical / grammatical / punctuation mistakes that affect the perception and comprehension of the text; demonstrates very limited adherence to stylistic norms);
spelling	2 points – one or no mistakes; 1 point – two mistakes; 0 points – more than two mistakes);
length of the text	2 points – the length of the text is acceptable (150-180 words); 1 point – the length of the text is partially acceptable (between 130 and 149 or between 181 and 200 words); 0 points – the length of the text is minimally acceptable (less than 130 or more than 200 words).

In the second stage, two experimental groups were formed. In the first experimental group, the tasks were focused on the students' English proficiency levels and learning styles (dominant and reserved); in the second experimental group, the tasks were differentiated only by English proficiency level.

In the third stage, the differentiated ESP instruction was carried out. In the first group, the learning styles (dominant and reserved) of IT students were defined using Oxford's Style Analysis Survey (1996). In this group, the instruction involved *three phases*.

Initially, reading-writing and listening-writing tasks were suggested for different IT students according to their dominant types of sensory modality (visual, auditory or kinesthetic) the predominant way of processing information (analytic or synthetic). As the dominant skill of the students with kinesthetic modality is speaking, we decided to give them the same tasks as students with predominant auditory modality. IT students with mixed sensory modalities were given auditory

or visual tasks. IT students with mixed ways of processing information chose tasks with an analytic or synthetic focus. Also, texts of various complexity according to the defined level of language proficiency (B1 and B2) were suggested to the IT students. Additionally, a separate group of tasks with scaffolding was offered to improve such writing skills as information compression, compensation, paraphrasing, and generalisation.

After that, the reading-writing and listening-writing tasks related to "the zone of proximal development" (Vygotsky, 1986, p. 187) were given to the students to develop their reserved type of sensory modality and way of processing information. Using various scaffolding tools, the teacher helped IT students to broaden their individual potential.

For example, to develop visual modality, the auditory students were suggested to create a mind map/table/scheme based on the text for reading (often, the beginning of the mind map/table/scheme was given by the teacher as scaffolding). Also, the keywords, phrases, beginnings or endings of the texts were offered. At the same time, to boost the auditory modality skills, visual students were offered to listen to the text several times or use the "pause" function and then generate a step-by-step plan of the text. Sometimes, the students could use subtitles to facilitate the comprehension of the text and choose the keywords and phrases from the text. This scaffolding was helpful for creating a text independently. To promote the growth of analytic and synthetic skills, the teacher asked to use inductive and deductive strategies.

Also, the exercises with scaffolding were offered to improve such writing skills as information compression, compensation, paraphrasing, and generalization. In this zone, differentiated tasks with scaffolding for improving the language level were proposed. Additionally, reading-listening-writing tasks were suggested.

The third phase was devoted to improving all the skills that had been obtained. At this phase, reading-writing, listening-writing, and reading-listening-writing tasks were suggested to IT students.

In the second group, initially, the complexity of the reading-writing and listening-writing tasks corresponded to IT students' level of language proficiency. Also, a set of exercises with scaffolding was focused on enhancing IT students' skills in condensing information, filling gaps in meaning, and rephrasing ideas.

Then, in "the zone of proximal development" (Vygotsky, 1986, p. 187), in order to enhance the learner's level in the performance of the reading-writing, listening-writing, and reading-listening-writing tasks with scaffolding were offered. The texts were of various lengths, and the tasks included words and phrases with or without translation and/or definitions in English, checklists, detailed plans or schemes, etc. Additionally, the exercises with scaffolding were aimed at the development of writing skills such as information compression, compensation, paraphrasing, and generalization.

In the third phase, IT students performed the tasks in accordance with the language level they had achieved. They practiced different reading-writing, listening-writing, and reading-listening-writing tasks.

In the fourth stage, IT students were suggested to do a post-test of the same structure and criteria for assessment as the pre-test to determine the students' English language proficiency levels and the effectiveness of teaching integrated writing using the differentiated approach.

Data analysis

The received data was analyzed using the Fisher's coefficient, a statistical method that enabled automatic processing and identification of patterns. The experimental results were then thoroughly examined, compared, and carefully interpreted to identify meaningful insights. This detailed analysis allowed for a comprehensive understanding of the results. It shed light on the specifics of the integrated writing skills development of fourth-year students in differentiated conditions.

Findings and Discussion

The analysis of the results showed that at the beginning of the differentiated ESP course, the English language level in both groups was almost the same. According to the results of the pre-test (Table 1), which consisted of Task 1 (Reading-Writing), Task 2 (Listening-Writing), and Task 3 (Reading-Listening-Writing), the students' English language levels were B1 (intermediate) and B2 (upper intermediate). In the first group, there were 30 students, and in the second group, there were 31 students with a B1 level. Among them, no one could perform task 3, where integration was focused on reading, listening, and writing. B2 was achieved by ten students in the first group and nine students in the second group. These students could perform all the tasks. In the post-test (Table 3), IT students of the first group demonstrated higher results compared with IT students of the second one. 11 of them achieved B1 level in the first group and 22 – in the second group. Correspondingly, B2 was gained by 29 students in the first group and 18 students in the second one. Despite this difference, IT students were able to complete all three tasks on integrated writing.

Table 3. The English language levels of IT students in pre-test and post-test

Levels of foreign language proficiency	Number of IT students in experimental groups															
	Pre-test								Post-test							
	B1				B2				B1				B2			
Tasks	1	2	3	Total	1	2	3	Total	1	2	3	Total	1	2	3	Total
Group 1	23	7	0	30	4	3	3	10	4	4	3	11	8	9	12	29
Group 2	22	9	0	31	3	4	2	9	8	8	6	22	7	6	5	18

Fisher's Criterion (2017) was used to establish which group of IT students showed higher results in integrated writing in the differentiated ESP course.

Two hypotheses were put forward:

H_0: The percentage of IT students who have improved their English language level in the first group (G-1) is not bigger than in the second group (G-2), as demonstrated by the results received.

H_1: The percentage of IT students who have improved their English language level in the first group (G-1) is bigger than in the second group (G-2), as demonstrated by the results received.

IT students who obtained 25-30 points (level B2) were considered to have achieved an "effect" during the differentiated ESP instruction. The students who received 19-24 points (level B1) were considered to have not achieved an "effect." $\varphi^*_{emp.}$ was calculated in accordance with the Fisher formula (2017) (Table 4)

$$\varphi^*_{emp.} = (\varphi_1 - \varphi_2) \cdot \sqrt{(n_1 \cdot n_2)/(n_1 + n_2)},$$

where

$\varphi_1 = 29$ (72.5%),

$\varphi_2 = 18$ (45%),

$n_1 = 40$,

$n_2 = 40$.

Table 4. The quality of learning outcomes in groups

Experimental groups	Learning effect achieved Number of IT students (%)	Learning effect not achieved Number of IT students (%)	Total
Group 1	29 (72.5%)	11 (27.5%)	40 (100%)
Group 2	18 (45%)	22 (55%)	40 (100%)

$\varphi^*_{emp.}$ was calculated automatically and equaled *2.535* (https://www.eztests.xyz/criteria/fisher_angular_transformation/results), which is greater than 2.31 (Figure 1). Therefore, *2.535* belongs to the significance zone.
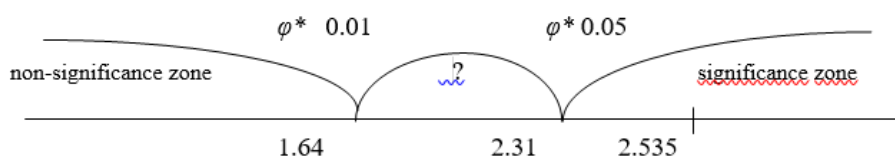

Figure 1. Empirical meaning φ^*

Consequently, the hypothesis H_1 is confirmed. This indicates that the percentage of IT students who improved their integrated writing skills due to English language level and learning style differentiation in the first group was bigger than in the second group, according to the reported results.

Discussion

IT professionals need a wide range of skills to quickly perceive, evaluate and process large amounts of information in a variety of formats (e.g., written, audio/video). In view of these needs of the IT sector, it is important to develop not only independent but also integrated writing skills of IT students. The results of this study, in which integrated writing skills were developed using the differentiated

approach, demonstrated a positive effect. In the post-test, in the first group, 29 students out of a total of 40 achieved the B2 level, while in the second group, 18 students out of a total of 40 achieved the same level. Also, compared with the results of the pre-test, all the students could perform the reading-writing, listening-writing, and reading-listening-writing tasks in the post-test. In the context of these findings, it is possible to draw some conclusions and explanations about the research questions.

Advantages of the incorporation of integrated writing tasks within the professional domain

The benefits of integrated writing tasks in the professional sphere are evident. Gebril (2018) states that integrated tasks allow students to gain background knowledge. This is very useful when students from different academic disciplines are involved (p. 2). Engaging with specific texts for reading and listening can be particularly motivating for students, as it enables them to both activate their existing professional knowledge and gain new insights, fostering a deeper understanding of their field. The integration of these texts into a written outcome allows the students to synthesise various viewpoints on a subject, leading to a richer comprehension.

Another benefit is that integrating reading and listening into writing tasks helps students see that each skill is not isolated and static but dynamic and interconnected. Additionally, the integrated writing tasks are focused on meaning-making, purposeful, and exploratory processes.

In line with this, Zamel (1992) states that with the aim of giving "students' experiences with reading that demonstrate the ways in which readers engage, contribute to, and make connections with texts, writing needs to be fully integrated with reading" (p. 463). It is added that "writing, because of its heuristic, generative, and recursive nature," allows IT students "to write their way into reading and to discover that reading shares much in common with writing, that reading, too, is an act of composing" (Zamel, 1992, p. 463).

With the development of writing skills, the advancement of listening and reading skills takes place simultaneously. So, teaching these skills in complex situations positively impacts the improvement of each skill. In addition, IT students learn to create relevant written content based on material read and/or listened to, organize and logically structure the text, and use proper grammar and vocabulary.

Specific skills students need to focus on when engaging in integrated writing tasks

In terms of hybrid tasks such as integrated writing, Liao, Zhu, and Cheong (2021) note that it requires the coordination of different language skills, such as listening, reading, and writing, and the acquisition of information from multiple sources.

Integrated writing, in its nature, is a complicated process that involves perceiving different kinds of information in written or oral form; processing and interpreting (analyzing, synthesizing, comparing, paraphrasing, summarizing, specifying, highlighting, evaluating, organizing, reorganizing) it and then creating a written product.

According to the results, the task requiring the integration of reading-listening-writing skills proved to be the most challenging. Only 6.3% of students (5 students out of 80) were able to complete it successfully at the beginning of the

experiment. This finding may be explained by the fact that this task required a high level of cognitive complexity. It demanded the students to simultaneously process and integrate information from multiple sources through reading, listening, and writing.

It means that reading-listening-writing tasks involve processing information skills through multiple modalities (reading, listening, and writing), while, for example, reading-writing skills focus on written text only. Also, reading-listening-writing tasks require the ability to adapt to different communication channels and formats, while, for example, listening-writing skills are more fixed in their format. Additionally, reading-listening-writing tasks can be used in a variety of contexts in the professional field, while, for example, reading-writing tasks may be more limited to specific contexts.

Approximately 29 % of students (23 students out of 80) were able to complete the listening-writing task in the pre-test. It could be difficult for students because it required simultaneous processing of auditory and written information. First, the students had to understand the spoken language and then convert the information into written form.

In the pre-test, the results of the reading-writing task were better than described above. 65% of students (52 students out of 80) could perform this task. The students had some difficulties in comprehending written text quickly and accurately, identifying main ideas and supporting details, and then producing a well-organised passage.

In view of this, it is urgent for IT students to practice different activities that require the students to combine reading and writing, listening and writing, reading, listening and writing; to use note-taking strategies and graphic organisers; to encourage peer review; to increase the complexity of the tasks; to provide differentiation in accordance with language level and learning style. Additionally, it is important for students to master such techniques as compression, compensation, paraphrasing, and generalization.

Pedagogical conditions for teaching integrated writing within the academic framework

The third issue is connected with conditions in which integrated writing should be taught. The current study showed that 72.5% of IT students revealed significant improvements in their integrated writing skills due to English language level and learning style differentiation in the first group. In contrast, only 45% of IT students in the second group demonstrated improved integrated writing skills, solely due to adjusting the English level. These findings indicated that incorporating both English language level and learning style differentiation may be advisable for optimal integrated writing skill development among IT students.

Taking into consideration the differentiation by English language proficiency level in the process of teaching integrated writing allows for the learning conditions for IT students with different foreign language abilities. Such type of differentiation is realised by suggesting a wide range of tasks of various levels of complexity (with or without explanations/translation/tables/diagrams; with different lengths of the text, tempo and type of speech (dialogue, monologue), level of noise).

Differentiation according to the learning style of students is important in integrated writing. In this regard, Machili, Papadopoulou, and Kantaridou (2019)

note that "in the multimodal reality … the learning process needs to be enhanced with a wealth of communication modalities, visual, gestural, social and cultural" (p. 9). Taking into account the students' dominant and reserved sensory modalities (visual, auditory or kinesthetic), their way of processing information (analytic or synthetic), allows IT students to select the preferred task. At the same time, they learn to balance between their dominant and reserved sensory modalities and the ways of processing information in the educational process. For developing the integrated writing skills, it is crucial to combine abilities to work with visual and auditory information.

In the first phase, the zone of comfort, it is recommended that reading-writing and listening-writing tasks be proposed. In performing these tasks, IT students operate with the knowledge and skills that correspond to their level of foreign language proficiency and learning style. The second phase, the "zone of proximal development" (Vygotsky, 1986, p. 187), plays a crucial role in ESP differentiation. In this zone, scaffolding is provided to help IT students move from their current level of proficiency to a new level of mastery. In this way, educators can design a dynamic and individualised approach to mastering integrated writing skills that correspond to each student's learning ability. The phase includes various reading-writing, listening-writing, and reading-listening-writing tasks that have increasing difficulty using scaffolding. The third stage is designed to improve integrated skills.

Thus, differentiation according to the level of foreign language proficiency and learning style in the complex provides gradual boosting of integrated writing skills, gives students a choice of tasks, helps to satisfy the needs of all students through mobile, short-term grouping, motivates them to learn, promotes their self-regulation processes, diversifies ESP learning.

The study was limited to Ukrainian participants only; however, similar surveys can be conducted on the data sets of different countries to receive new insights. Additionally, writing tasks can be integrated with reading, listening, and speaking to determine the effectiveness of differentiated ESP instruction.

Conclusions

In conclusion, the findings of the current study demonstrate the appropriateness of the use of integrated writing tasks in differentiated ESP learning at the university level. This is evidenced by the results received in the first group (72.5%), in which the integrated writing skills were developed by using language proficiency level and learning style differentiation. The students of this group exhibited significantly better achievements than those of the second group, where only differentiation according to the language level was realized.

Diverse differentiation promotes the formation of integrated writing skills in IT students for several reasons. First, differentiation focuses on sensory modalities and different ways of processing information. This, in turn, has a direct impact on the reading-writing, listening-writing, and reading-listening-writing skills. Developing students' reserved type of sensory modality and way of processing information using various scaffolding tools allows IT students not only to expand their individual potential but also to effectively perform integrated writing skills. Secondly, differentiation permits educators to develop IT students' integrated writing skills in a gradual and dynamic way, moving from the task performance in the zone of comfort that corresponds to their foreign language level to tasks in the

"zone of proximal development" (Vygotsky, 1986, p. 187) that provides the scaffolding. This enables IT students to move efficiently and develop higher-level skills.

In ESP learning, to develop effective integrated writing skills, IT students should engage in a variety of tasks that combine reading-writing, listening-writing, and reading-listening-writing. Additionally, IT students should use note-taking strategies, graphic organizers, and peer review to enhance their skills and vary the complexity of tasks. Mastery of techniques such as compression, compensation, paraphrasing, and generalization is also crucial for proficient integrated writing.

Developing writing skills in complex with listening and reading skills is important in the context of the demands of the students' future careers. In the design of integrated writing tasks, ESP teachers should take into consideration IT students' English language proficiency levels and learning styles.

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