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PEDAGOGICAL POTENTIAL OF INSTAGRAM IN TEACHING STUDENTS: ANALYSIS OF EDUCATIONAL DIMENSIONS

Abstract

This article presents a learning and teaching experience built on a project-based learning approach using Instagram as an educational tool to improve students' skills and increase their interest in English for Specific Purposes classrooms. Therefore, this study aims to investigate the impact of Instagram-based activities on ESP learning among higher education science (chemistry and biology) students and ascertain their attitudes toward this approach. The research is a mixed method in nature and uses questionnaires from 49 freshmen chemistry and biology students at a higher institution to understand their perception of social media tasks in ESP learning. The researchers selected Instagram as the platform for project work, aiming to improve students' ICT, communication, organization, research, self-reflection, and group work skills. Content analysis and student survey responses were analyzed to evaluate the project's effectiveness. Pearson correlation coefficient was calculated to measure the strength and direction of the linear relationship between two variables.

Keywords: Social Med Social media, English for Specific Purposes (ESP), Higher Education (HE), Project Work.

Introduction. Today's generation is aware of websites and applications that allow users to create and share content or participate in social networks. Currently, social networks authorize students to split anything to participate in academic subjects. Social media is not a limited resource; its knowledge and information will increase every year. It is an exciting, competitive way to teach students from all over the world without getting lost, with huge exposure resources. The platform variables have been expanded using super-technologies and interests, and they can interact with the audience in a completely convenient way. For a person who studies at a university or other higher education institution, social networks have played a vital role in their lives in recent decades. Through social networks, students can connect with peers and professors, access educational resources, and participate in online discussions (Alfadda et al., 2022; Ibrahim & Basim 2024). Additionally, social networks provide a platform for students to showcase their skills and network with potential employers.

Teaching English for Specific Purposes (ESP) is based on approaches that integrate effective concepts from various theories into a single system. It has unique features such as learner-centeredness, correlation with specialized subjects, and emphasis on both designing and educating (Richards and Rodger, 2014). The necessity to reassess the methodology of English language instruction and tailor it to the unique context of academic settings is evident from my experiences in teaching specialized foreign languages in Kazakhstan and internationally. Undoubtedly, the adoption of new approaches requires significant effort and time; however, it is crucial for English language instruction to be well-received and yield desirable outcomes (Tleuzhanova et al., 2021). At the same time, competency refers to the skills, talent, and ability to do something, and a competency-based curriculum is developed on the grounds of basic competency standards, that include well-planned learning objectives and end outcomes. Thus, the outcome-oriented method has become a dominant curriculum design model in higher education (Killen, 2000), and

ESP is no exception. The competency-based approach in education began due to socio-economic alterations and is now widely used in the majority of countries.

Linguistic knowledge should be determined by what an individual is capable of performing with learned and acquired information. The learner-centred approach has had a great impact on contemporary foreign language education where transmission has occurred from teacher to the learner. According to Nunan (2012), experiential learning is gaining popularity where students are transmitted to the center of the educational process. A well-designed competency-based curriculum is focused on what students can do at the end of the course, not on what they should know (Mosha, 2012).

Meanwhile, the use of technology in language teaching and learning has become more important in recent years, particularly during the COVID-19 pandemic, which forced many educational institutions to switch to remote learning modalities (Shadiev and Yang, 2020; Kamasak et al., 2021; Lavrinenko, 2022; Lei et al., 2022). As a result, mobile-assisted language learning (MALL) has gained more attention, and social networking tools have been used to facilitate language acquisition (Gonulal, 2019; Wrigglesworth, 2020; Ahmadi, 2021). Erarslan (2019) and Tavassoli & Beyranvand (2023) state that among social networking platforms, Instagram has attracted significant attention due to its popularity and potential for language learning. Instagram can be used as a source of several activities in language classrooms such as digital storytelling, grammar activities through photos, role plays, reading, and speaking activities through videos (Devana and Afifah, 2021). Soviyah and Etikaningsih (2018) and Meirbekov et al., (2023) asserted that Instagram can influence learners' autonomy, motivation, self-assessment, group work, and academic achievement which is the main description of competency-based education.

Because of its visual and contextual information, socially connected network of learners, remark and tagging functionality, and mobile application sharing capabilities (Ellison, 2017), Instagram has grown in popularity as

a medium for language teaching and learning (Persikova, 2017; Yang, 2021). Recent studies have shown that using Instagram to learn languages successfully improves learners' language skills and motivation to learn (Pujiati & Tamela 2019). It offers a dynamic language exposure that is crucial for successful language acquisition. Instagram may be used to practice speaking through both short and extended videos (Devana and Afifah, 2021) and writing through text messaging. Due to its image- and video-based resources, it is also a good resource for practicing grammar and vocabulary (Rasyiid et al., 2021). The use of Instagram as a teaching and learning tool has become increasingly popular in recent years, particularly in language instruction (Gómez-Ortiz et al., 2023). Thus, the use of Instagram as a teaching and learning tool has become more and more common lately, particularly in language instruction.

Although there have been some studies on the use of Instagram in language instruction, there have been far fewer studies on its usage in ESP classes, particularly in undergraduate scientific (chemistry and biology) programs. To help students build a variety of abilities and advance their professional profiles and careers through competency-based professional development, this pedagogical piece presents a learning and teaching experience using Instagram accounts for chemistry and biology (Gómez-Ortiz et al., 2023). Therefore, the purpose of this study was to examine the impact of Instagram-based activities on ESP learning among science university students and to ascertain their opinions of this methodology. The study can shed light on how technology-based training is used in language learning and help create modern language teaching methods that are efficient. The article aims to unveil students' opinions on the use of Instagram in the ESP classroom and contribute to the evolving field of ESP teaching and learning in the digital age. This study seeks to answer the following research question:

RQ1. What are chemistry and biology learners' perceptions of using social media-based tasks in learning ESP?

RQ2. To what extent is Instagram-based learning effective in acquiring competency-based skills such as ICT, communication, organization, research, self-reflection, and group work among chemistry and biology learners?

Materials and methods. This study is a mixed method in nature and uses questionnaires from 49 freshmen chemistry and biology students at SDU University in Kazakhstan. According to the educational curriculum for chemistry and biology majors, students had to take ESP courses in both semesters of one academic year, that is 90 contact lessons in total. The questionnaire was conducted to answer the first research question about chemistry and biology students' perception of social media tasks in ESP learning. The participants were pre-intermediate and intermediate level of English proficiency ranging from 18 to 19 years old. The researchers then analyzed the questionnaire results to determine the most popular social media platforms and student interest in using social media for learning. After some haggling with the students, Instagram was selected as the project work medium. Students worked in groups over 10-12 weeks to create Instagram channels focused on science topics of their choice. At the end of the project, students presented their channels to peers.

Then to answer the second research question, researchers conducted a content analysis of one of the Instagram channels, «vdna_project» to determine how well the channel aligned with learning outcomes given in evaluation criteria such as ICT, communication, organization, research, self-reflection, and group work skills. The researchers mapped the content of the 30 posts in the channel to the learning outcomes and also analyzed student survey responses related to their experiences after the completion of the Instagram projects by examining the mean scores and standard deviation (SD) for each question to determine which learning outcomes were most improved. Furthermore, the Pearson correlation coefficient was calculated to measure the strength and direction of the linear relationship between two variables.

Results. *1. Students' attitude towards social media.* This research aimed to examine the

effectiveness of Instagram-based learning in developing students' skills in the ESP course. The first step is to find out science students' perceptions of social media and the possibility of utilizing this method for educational purposes. The obtained questionnaire results from chemistry and biology students are presented in Table 1-2 and Figure 1.

Table 1. *The age range of chemistry and biology students*

Age range	n	Percentage
18 years old	47	95.9%
19 years old	2	4.1%
Total	49	100%

Based on Table 1 the majority of respondents 95.5% were 18-year-old students and only 4.1% were 19 years old.

Derived from the data provided in Table 2, it can be concluded that the majority of students spend some amount of time on social networking sites during the day, with only 10.2% of respondents indicating that they do not spend any time on social media at all. The majority of students spend between 1-5 hours with the highest percentage of students (24.5%) spending 5 or more hours per day. Given results show that the majority of students use social networking sites for varying lengths of time daily, it suggests that using social media-based tasks in learning ESP could be an effective way to engage students in the learning process.

Such tasks could include using social media platforms like Instagram or Telegram to share and discuss scientific articles, participating in online discussion forums related to the course content, or even creating multimedia presentations for class projects.

Table 2. *Time spent on social media per day by chemistry and biology students*

Time Spent	n	Percentage
None	5	10.2%
0-5 minutes	0	0%
5-10 minutes	0	0%
10-30 minutes	1	2%
30 minutes to an hour	1	2%
1-2 hours	7	14.3%
2-3 hours	5	10.20%
3-4 hours	9	18.40%
4-5 hours	10	20.40%
5+ hours	12	24.50%
Total	49	100%

In light of this, the next query focuses on identifying the social media sites that students utilize the most.

According to the bar graph above, Instagram, YouTube, and Telegram are the three social media networks most frequently used by chemistry and biology students. Students use YouTube, Telegram, and Instagram in proportions of 91.8%, 79.6%, and 20.4%, respectively. This suggests that, among students, Instagram, Telegram, and YouTube are the three most popular social media platforms. Due to their popularity, these three websites might be especially helpful for developing social media-based projects in ESP learning. The last query asks whether or not students are interested in using social media as a teaching tool in ESP classes. The responses are as follows:
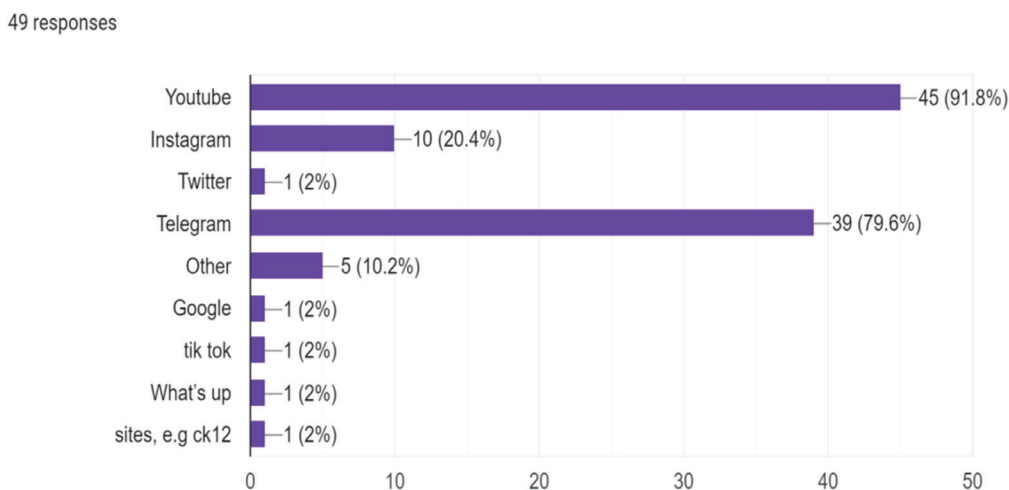
49 responses

Figure 1: Which social platform do you mostly use?

Table 3. *Attitudes of chemistry and biology students toward using social media as an educational tool in ESP classes*

Responses	n	Percentage
Yes	41	83.7%
No	8	16.3%

Only a small minority (16.3%) of students express reluctance about using social media as a teaching tool in ESP classes, while the majority of students (83.7%) are enthusiastic about it. This suggests that incorporating social media into language learning may be a promising approach to engage students and enhance their language skills. As stated in the study findings, social media-based learning tasks for ESP students are a practical choice for involving them in the learning process. Students studying chemistry and biology tend to frequent YouTube, Telegram, and Instagram the most. One of these websites can help develop social media-related projects. However, it is important for educators to carefully design and implement social media-based activities that align with the learning outcomes and address potential privacy and safety concerns.

2. Instagram-Based Assignment. The next step is to assign social media-based tasks to chemistry and biology students. One of the learning outcomes in the ESP course for chemistry and biology students sounds like 'By the end of the course, students will be able **to create** project work by providing personal information collected in 10-12-week time'.

Thus, after obtaining the questionnaire results presented above it was negotiated by students to choose Instagram as a tool for their long-term project. Sometimes basic knowledge and vocabulary are not enough and students need to know how to apply the information and vocabulary they acquired in real-world situations. Creating project work was a lot of fun for students. The project aimed to allow students to experiment with developing knowledge in the science sphere (chemistry_ biology) through creating and designing their products. Students researched the topics that would be suitable, interesting, and useful for the targeted audience and for themselves in the English language. Once students have worked through the project, they leave the class with the background knowledge in their professional field. This personal and scientific knowledge that is gained will always need to be received and updated, but having thoughtful plans, and ideas, feeling empowered and even proud of final work. Creating and designing educational pages requires actively participating and completing assignments on time. Project work should cover topics that are designed to draw the audience's attention to science subjects and

involve activities to motivate and interest other students to learn more about their profession.

Throughout the process, students learned 21st-century skills, as well as the basics of personal interests. These skills included information and communication technology (ICT), communication and presentation, organization and management, research and inquiry, self-assessment and reflection, and group participation and leadership skills.

The procedure for conducting a project work was as follows: One group was divided into several subgroups of 4 - 6 students each. Students were divided into groups by Perfect Pick App

and those who were selected in the same team were considered as one team member, and acted on the principle 'one for all and all for one'. The student's work was tracked in a weekly report in the teacher's office hours' time. Each group had to submit a report about the work they completed or not, the progress, difficulties, or any type of information regarding the project work. Project work was given 20 points making up 10% of the final examination mark.

To evaluate the skills mentioned above, the evaluation criteria of the project work (Raikhanova and Kassymova, 2019) are presented in Table 4 below.

Table 4. *Evaluation criteria of the project work*

Desired Skills	Required Abilities	Points
Information and communication technology (ICT)	Ability to effectively use various technology tools and software, create and edit documents, presentations, and spreadsheets, and navigate the internet and social media	4
Communication and presentation	Ability to effectively convey information through various forms of communication, such as written and oral, and deliver engaging and informative presentations	4
Organization and management	Ability to plan and prioritize tasks, manage time effectively, and organize resources efficiently	4
Research skills and group participation	Ability to conduct research, gather and analyze data, synthesize information, effectively participate in group activities, collaborate with others	4
Self-assessment and reflection	Ability to reflect on personal strengths and weaknesses, set goals for self-improvement, and evaluate personal progress	4

Students completed the assignments weekly using the personal information that they collected in 10 (12)– weeks and checking the track with the checklist as follow: My project is creative and original; I have my work done and I have all of my materials; Our team knows what work needs to be done and has divided up the work fairly; My presentation will demonstrate my knowledge of the subject matter; My project relates to the topic and includes accurate facts, supporting details, and high-quality examples.

Students had to choose interesting topics to complete the project throughout the semester. They were able to add any activities they liked while creating their channel on Instagram. Students were given total autonomy in deciding the name of the channel, design, and content.

Following the given procedure at the end of the term students presented their Instagram project work channels. They are called all_about_water, human_phys_sdu, virus_nerd, vitamins_chembio, and vdna_project. Further, the description of each channel is given (see Figure 2).

Information about water, including its characteristics, daily consumption, ideal timing, and World Water Day, can be found on the «all_about_water» Instagram channel. The channel discusses the advantages of water for the bones, skin, intestines, blood, kidneys, stomach, heart, lungs, and brain, among other body parts. It also addresses topics like storms, tsunamis, water shortages, and melting glaciers. Water use, weight loss, the water cycle, rain formation, cold and warm water, the effects of
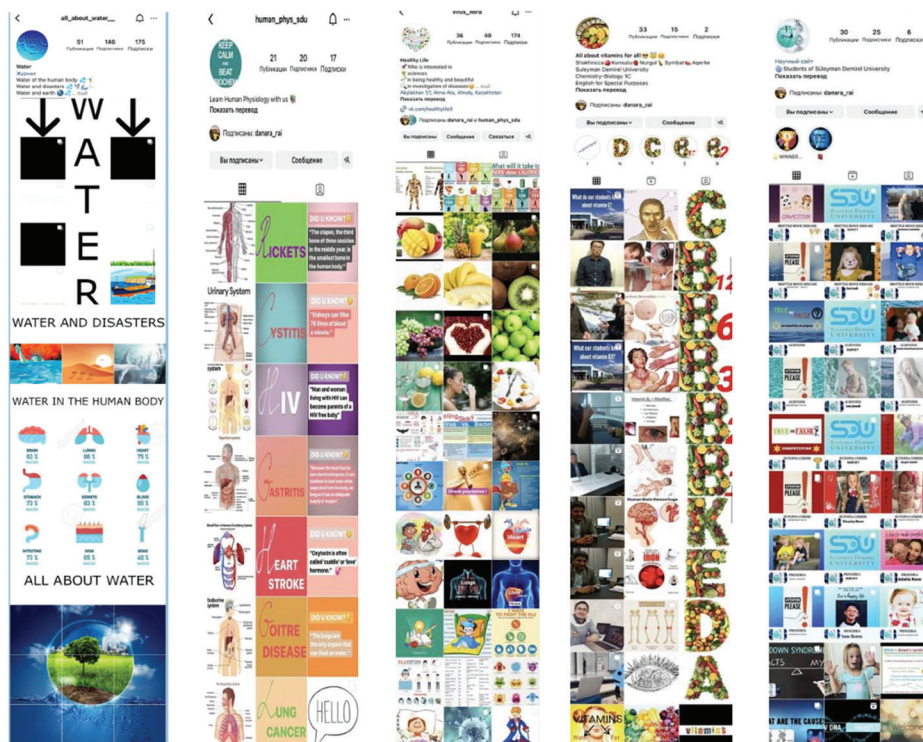
Figure 2: Scan version reviews on Instagram channels conducted by students

an empty stomach, and water pollution are all topics covered in the animated videos on the channel.

The Instagram account «human_phys_sdu» provides a thorough understanding of human physiology, including organs and cells. It covers vital organs and diseases like lung cancer, goiter, heart attacks, strokes, gastritis, HIV, cystitis, and rickets as well as vital systems like the immune, neurological, digestive, respiratory, circulatory, and endocrine systems. Three categories make up the channel: fascinating information, disorders, and a thorough examination of the major bodily systems. Each article has a glossary and clear illustrations to make it simple to understand.

An Instagram project called «virus_nerd» gives users a thorough rundown of ailments brought on by bacteria or viruses, as well as information on nutrition and treatment options. The channel emphasizes the value of a well-balanced diet for overall well-being and offers details on the nutrients that are crucial for optimum health. It is intended for those who want to improve their vocabulary and are interested in science and health.

The «vitamins_chembio» Instagram project provides details on vital vitamins to support healthy bodily function. Three sections make up the channel: a thorough explanation of each vitamin, its significance for the body, and potential disorders brought on by a deficiency. It also includes videos with advice on maintaining a balanced diet and comprehending the value of vitamins from college students, faculty deans, and biology professors. The project successfully introduces viewers to challenging scientific ideas and offers a thorough manual for maintaining bodily health.

The "vdna_project" is an Instagram channel that educates young people about genetic disorders and their causes without requiring biology or science background. The channel, named «V» meaning «within,» provides background information, real-life examples, and important information for each condition. It also offers games, exercises, and video surveys to test audience understanding. The channel effectively introduces complex scientific concepts to a larger audience through real-life examples and interactive activities.

3. Content Analysis and Alignment between Learning Outcomes and Content of Instagram Channel. A content analysis of the vdna_project channel was conducted to address the second

research question. A content analysis is a technique for carefully analyzing and describing the material to determine how it relates to the targeted learning outcomes. Desired Outcomes are Information and Communication Technology (ICT) Skills; Communication and Presentation Skills; Organization and Management Skills; Research and Inquiry Skills; Self-Assessment and Reflection Skills and Group Participation and Leadership Skills. The content of the channel was sorted based on the posts uploaded by chemistry and biology students on Instagram as follows:

1. Introduction to the Channel and its Aim;

2. Explanation of Genetic Disorders, their Causes, and Prevention;

3. Explanation of the Structure of DNA and Mutations;

4. Explanation of Down Syndrome;

5. Video Post about a Little Girl Sofia with Down Syndrome;

6. Explanation of Myths and Truths Related to Down Syndrome;

7. Explanation of Progeria Disease;

8. Video and Story of a Teenager Sam Bern's Struggling with Progeria Disease;

9. Explanation of Facts about Progeria Disease;

10. Video Post about a Famous 11-year-old YouTuber Adalia with Progeria;

11. Survey Conducted on University Students about Progeria Disease;

12. Explanation of Ectopia Cordis Disease;

13. Video Post about a Girl Virsaviya Suffering from Ectopia Cordis Disease;

14. Explanation of Important Facts about Ectopia Cordis Disease;

15. Video and Story of a Young Man Arpit Gohil Struggling with Ectopia Cordis Disease;

16. Survey Conducted on Students about Ectopia Cordis Disease;

17. True or False Game for Followers;

18. Explanation of Albinism Disease;

19. Video Post about a Young Man Leo with Albinism;

20. Explanation of Important Facts about Albinism Disease;

21. Video Post about a Unique Compatriot Baby Dilnaz with Albinism;

22. Survey Conducted on Students about Albinism Disease;

23. True or False Game for Followers;

24. Explanation of Brittle Bone Disease;

25. Video Series about a Little Girl Zoe Lush with Brittle Bone Disease;

26. Explanation of Important Facts about Brittle Bone Disease;

27. Video and Story of a Young Compatriot Man Struggling with Brittle Bone Disease;

28. Survey Conducted on Students about Brittle Bone Disease;

29. True or False Game for Followers.

Now it is important to make an alignment between desired outcomes and channel content.

Table 5. *Alignment between desired skills and the channel content*

Desired Skills	Content of the "vdna_project" Instagram Channel
1. Information and Communication Technology (ICT) Skills	Learners use Instagram to create, upload, and share content related to genetic disorders, such as posts, videos, surveys, and games. Students also learn to select appropriate programs for editing materials, videos, and sound systems.
2. Communication and Presentation Skills	Learners create content that effectively conveys information about genetic disorders to the target audience, using language and media appropriate for the platform. At the end of the project, students have to present their channel to other students.
3. Organization and Management Skills	Learners plan and implement a long-term project that involves researching and presenting information about genetic disorders in a structured and organized manner, using tools such as project timelines and task lists.

4. Research and Inquiry Skills	Learners research various genetic disorders and present information clearly and concisely, using credible sources and scientific terminology. One of the members of this project Student N published an article on the topic: "Effectiveness of using the educational pages on social media for school students" in a student conference book entitled «Development and Prospects of Science of Kazakhstan through the Eyes of Youth», SDU.
5. Self-Assessment and Reflection Skills	Learners reflect on their project work and identify areas for improvement, such as content quality, communication effectiveness, and relevance to the target audience every week reporting the results to the instructor.
6. Group Participation and Leadership Skills	Learners work collaboratively with peers to create and share content about genetic disorders, taking on various roles and responsibilities, such as content creation, editing, and review.

The project described in the summary focuses on using Instagram as a platform for learning about genetic disorders. The project aims to develop a range of skills among learners, including ICT skills (Kassymova et.al., 2023; Hidayati et al., 2023) for creating and editing content, communication and presentation skills for effectively conveying information to the target audience, organization and management skills for planning and implementing long-term projects, research and inquiry skills for conducting research and presenting information clearly and concisely, self-assessment and reflection skills for identifying areas for improvement, and group participation and leadership skills for working collaboratively with peers. One member published an article on social media in education for the conference for students.

By aligning the desired outcomes skills with the content of the Instagram channel, the effectiveness of the project work can be assessed and areas for improvement identified. Instagram project work can help students develop the skills needed to create high-quality, engaging, and informative content about genetic disorders. Based on the data provided in Table 5, we perform inferential statistics to determine the level of association between the desired outcomes and the learners' attitudes by examining the mean scores for each question to see which desired outcomes were most strongly associated with the learners' perceived level of improvement.

Table 6. _Descriptive statistics for desired outcomes skills and Instagram project skills ratings_

Skills	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Total	Mean	Min	Max	SD
Working in group	27.27%	36.36%	27.27%	9.09%	0.00%	49	3.18	1	5	0.98
Researching ideas	27.27%	63.64%	9.09%	0.00%	0.00%	49	3.82	3	5	0.6
Creating the product	63.64%	36.36%	0.00%	0.00%	0.00%	49	4.36	3	5	0.81
Designing the product	63.64%	36.36%	0.00%	0.00%	0.00%	49	4.36	3	5	0.81
Presenting ideas	36.36%	45.45%	18.18%	0.00%	0.00%	49	3.82	3	5	0.87
Exhibiting the product	36.36%	45.45%	18.18%	0.00%	0.00%	49	3.82	3	5	0.87
Learn New Skills	36.36%	54.55%	9.09%	0.00%	0.00%	49	4.09	3	5	0.7
Instagram was a great experience	54.55%	27.27%	9.09%	9.09%	0.00%	49	3.91	2	5	0.94

From Table 6, we can see that the mean scores for all questions are above 3.0, indicating that the learners generally had positive experiences with the Instagram project and perceived

improvement in the desired outcomes. The mean scores for «Creating the product» and «Designing the product» were the highest, at 4.36, followed closely by «Researching information» and «Learning new skills,» both with mean scores of 4.09. This suggests that the desired outcomes related to creating and designing content, as well as learning new skills, were strongly associated with the learners' perceived level of improvement.

To further explore the relationship between the questions, Pearson's correlation coefficient was calculated. Pearson's correlation coefficient measures the strength and direction of the linear relationship between two variables. In this case, the variables are the perception questions in Table 6, and the correlation coefficient shows how strongly they are related to each other. A correlation coefficient of 1.0 indicates a perfect positive correlation, while a coefficient of -1.0 indicates a perfect negative correlation. A coefficient of 0 indicates no correlation.
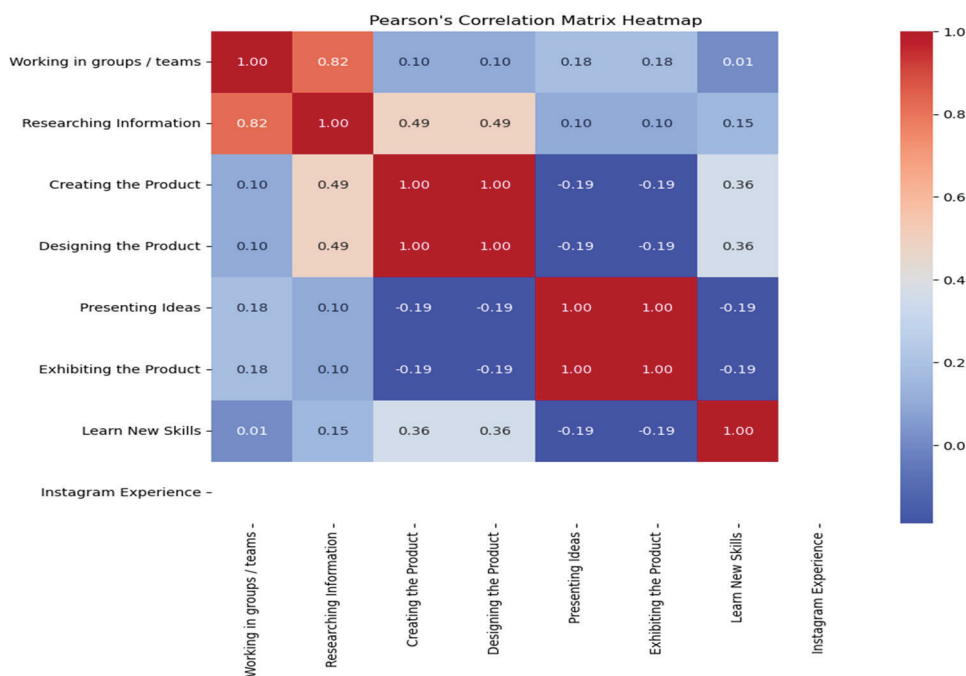

Figure 3: Pearson's correlation matrix heatmap for desired outcomes skills in Instagram-based learning

The correlation matrix heatmap illustrates the associations among various facets of project engagement. Each cell in the heatmap represents the correlation coefficient between distinct variables pertinent to project participation. Heatmaps employ a color gradient to depict the strength and direction of correlations between variables. Typically, cool colors such as blue are used to represent low values or negative correlations, while warm colors like red indicate high values or positive correlations. Shades of color intensity correspond to the magnitude of the values, with darker shades representing stronger correlations or larger values, and lighter shades indicating weaker correlations or smaller values. Neutral colors, such as white, are employed to denote values close to the midpoint or zero correlation. Looking at Figure 3, we can see that there are some moderate positive correlations between the different questions. For example, there is a moderate positive correlation between «Presenting Ideas» and «Exhibiting the Product» (r = 1.00) indicating that learners who are good at presenting ideas are also likely to be good at exhibiting their products and between "Creating the product", «Designing the Product» (r = 1.00) and suggesting that Instagram-based project engaged some learning experiences ("Creating the product", «Instagram was a great experience for me») (r = 1.00).

We believe that these findings have important implications for educators and instructional designers who are interested in promoting the development of these skills in learners. For example, instructional strategies that emphasize collaboration and delegation of tasks may be effective for promoting both group work and research skills. Similar to this, approaches that emphasize the growth of creativity and problem-solving skills may help foster both product creation and design capabilities.

Conclusion. According to the findings, social media can be a useful educational tool for helping students achieve their learning objectives. Students reported positive experiences with the Instagram project and perceived improvements in learning outcomes, with the greatest improvements in product creation, design, research, and learning new skills. Concept presentation, product display, learning new skills, and believing the Instagram project was worthwhile all had marginally positive correlations. This suggests that instructional strategies emphasizing collaboration, task delegation, creativity, and problem-solving may be useful for developing these skills.

While the study provides some insights into the relationships between the desired outcomes, there are some limitations to the interpretation of the results. For example, the study design did not account for other factors that may influence the development of the skills, such as learners' prior knowledge or motivation. Additionally, the study sample was relatively small, which may limit the generalizability of the findings. Overall, the results indicate the need for developing 21st-century skills in learners and the possibilities of other social media such as YouTube and Telegram, among others, as educational tools. By giving students autonomy to direct their learning on social media platforms they actively engage with, instructors can design motivating learning experiences that cultivate critical skills. Further research with a larger sample is needed to confirm and extend these findings.

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