

POSTERS

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About these abstracts

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classes increases students' satisfaction which contributes to the efficiency of the learning/teaching process.

P-E-01-07
Improving the learning environment and students' satisfaction through the combination of spaced learning and team-based learning – the impact on students' perception and engagement

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With the aim of motivating and engaging the students during the Integrative Biochemistry class, lectured in the bachelor's degree in Biomedical Sciences at the University of Aveiro, a combination of two different methodologies were implemented: Team-based Learning (TBL) and Spaced Learning (SL). This pedagogical practice emerged as an alternative to a purely theoretical 3-hour class, in which keeping the students focused and interested can be challenging. The main objectives of this pedagogical innovation were to promote the collaboration between students and, at the same time, keep them motivated throughout the semester. A typical Biochemistry class involves various steps which combine different flavors of TBL and SL: a bibliography is provided to the students for them to get familiarized with it one week in advance; in class, the students answer an individual quiz, followed by a group quiz; the next step is solving a problem. Meanwhile a SL break occurs in which students do distracting activities (usually physical activities). Lastly, a short seminar in the form of Q&A occurs, where doubts are clarified. The assessment of this class involves two written tests, the quizzes, the solved problems in class, a class project, and the attendance. Data has been collected through different means: focus group interviews, questionnaires, and observation techniques. The students feedback obtained was highly positive (results obtained in the university quality system and in the class final questionnaires). In particular, when they were asked what they liked the most the answer was – SL. The communication will present the main results of the implementation of the pedagogical innovation, with specific examples of SL activities.

P-E-01-08
Building our future, a conference by and for undergraduates

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Motivation is a key aspect of a learner's performance. The type of motivation we are interested in "fostering" is intrinsic motivation, closely linked to the concept of learning-centered goals and objectives. Two of the aspects that should be taken into account

when motivating university students are the promotion of student participation and the search for practical applications. Thus, we are committed to the implementation of participatory techniques for the performance of important tasks in their professional field. The action took place in the Biology course of the first year of the Chemistry Degree. The students were divided into teams, in which they were asked about different aspects related to their professional future (Research, Teaching and Bio-Entrepreneurship). The study presented is based on the work of the teams that were dedicated to the organization of the Scientific Conference in which the students presented their projects. The themes of the teams that carried out the organizational tasks were: a) Activities before the conference. Logistics; b) Activities before the conference. Budget; c) Activities during and after the conference. The dynamics of the action were based on: i) an initial session, in which the objectives and guidelines to be followed were clarified; ii) several meetings with the teachers who guided them during the search for information, interviews with experts, organization of the information and preparation of communications; iii) a final session, in which the students presented their work in a public event at the Building our Future Conference. Based on the results obtained, we can affirm that the proposed action has had an impact on teaching practice insofar as the "research" is motivated by the reality of their professional practice, contributing to the improvement of the quality of face-to-face teaching. Teaching Innovation Group InDoBio 5.0, Universidad de Alcalá (UAH) Funding: Universidad de Alcalá (UAH) "UAHEV/1221"

P-E-01-09
Biotechnology and biochemistry laboratorial education through the SARS-CoV2 pandemic: challenges, truths and takeaways

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In early 2020, the COVID-19 pandemic forced the higher education institutions to adapt to a new form of teaching and learning, from presential to full remote, blended and hybrid environment. This challenge had a particular impact in the life sciences field where the courses have a high content of laboratorial classes. The main issue was how to transition from hands-on practical classes to remote instruction, assuring that our students continued engaged and acquiring the necessary skills, in a short amount of time. To address this, we took advantage of already available digital tools that facilitated the interface with the students such as Moodle, Skype, Teams and ZOOM and explored online resources such as virtual labs, simulations and video demonstrations. Additionally, several classes and laboratorial experiments were recorded by the teachers in the school labs and the research labs where we develop our research activity. The creation of teachers' work groups to share experiences and tools was key in the success of this process. To ensure the students evaluation we used preferentially Moodle platform which allowed the used of digital tools to control and prevent fraud by copying, plagiarism or false identity. Despite all efforts from teachers and students, crucial elements of the high education experience, particularly for undergraduates, were disrupted. Namely the student-teacher and student-student contact and interaction and the integration in the academic setting, resulting in stress and feeling of isolation

and overwhelm. Even with the difficulties faced by all the academic community, we observed no major changes regarding the academic success reflected in the final grades, comparing with previous years. In our understanding the core skills proposed for these courses were acquired successfully and the digital tools used with exception for the student's evaluation, are now considered an added value and bring flexibility to the teaching-learning process. *The authors marked with an asterisk equally contributed to the work.

P-E-01-10

The use of tactile models for the teaching of biomolecules

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Tactile models that represent molecular structures have been used in science teaching and, as demonstrated by research in the area, facilitate the learning of topics that demand molecular abstraction. Our scientific education group developed strategies and teaching materials as 3-D models representing structures of biomolecules (nucleic acids, amino acids and proteins) to teach this subject to biology teachers. The course offered in 2019 was attended by 38 high school teachers, among whom a survey was carried out regarding their impressions about the use of tactile models for teaching and learning biomolecules. The models were used within a problematizing didactic sequence, which was also applied by the teachers with their students. At the end, teachers were asked about the use of tactile models in their own learning and in that of their students. Seventeen teachers stated that the use of tactile models for assembling molecules brought benefits in the learning of the contents, attributed to the following beliefs: the activation of the senses (handling and visualization) was a facilitator for the understanding of the structure of biomolecules; the use of models motivates the user to learn. These and other impressions collected in the courses offered by our group over the last 17 years motivated a previous research (Silva and Bossolan, 2019), which evaluated the contribution of these tactile models to the elaboration of mental representations about proteins with undergraduate students, under the Johnson-Laird's mental models theory. This study identified that the use of tactile models promoted the construction of more sophisticated protein models, besides the capacity to predict the functional loss of the protein from changes in its structure. We therefore intend to include in our teacher training courses a discussion about how individual mental models are formed and which didactic strategies collaborate with their formation and/or expansion. *The authors marked with an asterisk equally contributed to the work.

P-E-01-11

Protocol for evaluation of DNA damage – a transfer of knowledge from theoretical subjects into practical elective subject Student research work at the Faculty of Medicine

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The following study was performed by Jinan Fazal, a pregraduate student at the Faculty of Medicine in Hradec Kralove, as a

part of the elective study subject, Student research work. The aim was to establish a protocol for the evaluation of DNA damage caused by different anticancer drugs. This protocol will enable a future student of the subject to get familiar with basic laboratory techniques and above that, it puts into practise the theoretical knowledge taught within the subjects Biology, Biochemistry and Pathobiochemistry of the cell. As a model system, the MCF-7 breast cancer cells treated with increasing concentration of doxorubicin (0.1 to 10 μM) for 2 hours, were chosen. As one of the earliest events after DNA damage is phosphorylation of histone H2AX at serine 138, the cells were stained with primary anti-phospho-histone H2A.X (Ser139) and secondary Alexa Fluor 488-AffiniPure Goat Anti-Rabbit antibody. The labelled samples were acquired by the mean of ImageXpress XLS and the percentage of cells expressing phosphorylated H2AX analysed with MetaXpress 6.3 software. Developed protocol gives the students opportunity to gain skills in cell culture cultivation and treatment, immunofluorescence staining, image acquisition and analysis. Besides, it can be routinely employed for assessing DNA damage caused by various stimuli.

P-E-01-12

Teaching of scientific research skills to Medical Doctor Program students during the first two years of study

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Teaching of scientific research skills is one of the main aims of the Medical Doctor program. European University Medical Doctor Program was modified in 2019 according to WFME standards and national medical benchmark and important changes were made in the teaching of scientific skills. Program evaluation is performed annually by all stakeholders. Students' academic performance of the fall semester of 2021-22 academic year was evaluated in the courses „scientific reasoning I” and „scientific reasoning II”, which are taught in the II and IV semesters respectively. In total 73 students took „scientific reasoning I” and 82 students took „scientific reasoning II” in this period. Based on the results, 15% of students failed and 28% crossed the minimum threshold in „scientific reasoning I”. In „scientific reasoning II” 5% of students failed, 67% crossed the minimum threshold, while none of the students could get the highest mark „A”. Same students' academic performance was evaluated in all other subjects, but such low performance was not observed. Special survey was distributed among the Faculty members delivering the subjects „scientific reasoning I and II”. In the answers, all lecturers underlined that the main reason of students' low performance is caused by the difficulty of the subject and learning material. Another possible reason indicated by the lecturers can be the early entry of scientific skills teaching in the curriculum (from II semester). Based on all above mentioned, we can suppose that first and second year MD students are more focused on basic subjects of major field, which are time and energy consuming. Accordingly, it is important to reconsider the teaching and assessment methodology of research skills in order to increase students encourage in the study process and to support them to reach learning outcomes. *The authors marked with an asterisk equally contributed to the work.