INTERNATIONAL JOURNAL OF EDUCATION AND PHILOLOGY

DOI: https://doi.org//10.69648/CXNO2578

International Journal of Education and Philology (IJEP), 2025; 6(1): 59-73

ijep.ibupress.com

Online ISSN: 2671-3543

Application :11.05.2025

Revision :18.05.2025

Acceptance :19.06.2025

Publication :30.06.2025

Stevkovska, M. (2025). Promoting active learning through warm-up activities in higher education. International Journal of Education and Philology, 6(1), 59-73. https://doi.org//10.69648/CXNO2578

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BALKAN JOURNALS

Promoting Active Learning Through Warm-up Activities in Higher Education

Marija Stevkovska

Abstract

This article investigates the role of active learning in higher education through the use of engaging warm-up activities and teachers' perceptions thereof. Although the latest trends in tertiary education emphasize the importance of student-centered learning, university staff are reluctant to transition from a traditional to an active teaching and learning style (Børte et al., 2023). Warm-up activities promote active learning and have been widely used in English classes, but there is a lack of research into their usage in other subjects. A combination of a quantitative and qualitative study within the Exploratory Action Research approach was employed to analyze a) course instructors' perceptions of utilizing warm-up activities in higher education courses across various disciplines, and b) the impact of organized training sessions on active learning on teachers' perceptions and experience with warm-ups.

30 course instructors from 7 faculties at International Balkan University in Skopje participated in the study. Results indicate that the staff from the Faculty of Education are well acquainted with these types of class activities, and they are the ones who use them most frequently. Course instructors from other faculties lack pedagogical knowledge and thus prefer an individual and traditional approach to teaching. The training sessions proved to be effective for the academic staff, as they motivated them to include more warm-up activities and make their classes more student-centered. Therefore, universities should organize training sessions and provide continuous support at an institutional level for all academic staff to promote the use of active learning activities.

Keywords: active learning, warm-up activities, higher education, training, academic staff

Introduction

Active learning is an instructional approach that includes different forms of activation, such as increased physical activity, interaction, social collaboration, deeper processing, elaboration, exploration of the material, or metacognitive monitoring (Markant et al., 2016). Students' needs, working life, and the socio-economic changes in the 21st century call for student-centered education (Ditcher, 2001). Generic life skills are considered major learning goals because of their significant role when university graduates enter the labor market (Grosemans et al., 2017). Although the latest trends in higher education emphasize the importance of student-centered learning, university staff are reluctant to transition from a traditional to an active teaching style (Børte et al., 2023; Ribeiro-Silva et al., 2022). Furthermore, recent studies have confirmed the effectiveness of warm-up activities, as they help students focus and become active participants in the lesson (Savaş, 2016; Estalkhbijari & Khodareza, 2012). Academic staff at universities often lack a pedagogical background concerning teaching methodology, which results in the rare usage of warm-up activities as a way of beginning a student-centered class. Therefore, the article aims to explore the role of active learning in higher education and university staff attitudes towards the implementation of engaging warm-up activities.

Literature Review

The theoretical foundations of active learning lie in constructivist learning theories (Baviskar et al., 2009). Active learning facilitates students becoming self-aware and taking responsibility for their own learning. Nash (2012) claims that "Students ought to be participants in their learning rather than attendees in a passive process. Attendees attend, participants participate" (Nash, 2012, p. 15). Active learning methods include instructional approaches that employ the following activities: collaborative learning, debates, discussion, brainstorming, case study, role-play, games involving simulation, problem-based teaching, peer teaching, projects (individual or group), and short demonstrations followed by class discussion (Mocinic, 2010). In the classroom, teachers should adopt active learning strategies, provide timely feedback, and use appropriate assessment to empower students in their learning (Sewagegn & Diale, 2019). Warm-up activities enable a smooth transition between the world outside and the classroom setting. They are widely used in language education as they help students focus on the lesson, motivate them

to increase their class participation, activate students' prior knowledge, create a friendly learning environment, and enable teachers to scaffold complicated concepts for their students (Joshi, 2006; García & Martín, 2004). In addition, "Evidence from imaging sources, anatomical studies, and clinical data shows that moderate exercise enhances cognitive processing" (Jensen, 2005, p. 67).

According to Børte et al. (2023), there are three prerequisites for student active learning to succeed: (1) better alignment between research and teaching practices; (2) a supporting infrastructure for research and teaching; and (3) staff professional development and learning designs. In this regard, a literature review reveals a lack of research into how prepared academic staff are to implement active learning (warm-up) activities in their teaching. This refers particularly to academicians from fields other than education and pedagogy.

Research Methodology

A mixed-methods research design was adopted to conduct the study within the theoretical framework of the Exploratory Action Research (EAR). The EAR approach was initially developed to support the continuous professional development (CPD) of English language teachers (Smith & Rebolledo, 2018). This study widened its scope to encompass the CPD of academic staff from different affiliations. The EAR approach was selected as it enables teachers to reflect on their teaching practices, explore ways of improving them, and ultimately take action that would promote active learning in the classroom.

The participants were selected through the purposive sampling technique. Namely, 30 course instructors, from 7 faculties at International Balkan University (IBU) in Skopje, who registered for the training sessions on active learning organized by the IBU Teaching and Learning Center, were included in the study. Their university teaching experience ranged between 1 and 15 years.

A needs analysis and two questionnaires were used as instruments to collect data on academic staff perceptions of the use of warm-up activities before and after receiving training on active learning and the implementation of engaging warm-up activities in higher education courses across various disciplines. The three questionnaires were tailor-made to meet the needs of the selected participants. All three surveys were created and sent to participants through the Google Forms platform due to its accessibility and convenience. The needs analysis questionnaire consisted of eight questions (seven multiple-choice and one open-ended question) related

to the department, years of teaching experience, familiarity with the concepts of active learning and warm-up activities, and teaching methodology-related courses as part of both their formal and informal education. The pre-training questionnaire also comprised eight questions, while the post-training questionnaire resembled the one sent to the participants before the sessions, with six additional open-ended questions referring to their feedback on the training sessions as well as familiarity with the concepts of active learning and warm-up activities. The questions were designed to gather data on teachers' perceptions and their personal experiences with warm-ups after the training sessions.

The study was conducted in the following steps:

1) analyzing academic staff needs before planning the three training sessions on active learning;

2) filling out a pre-training survey;

3) attending a training session on promoting active learning in higher education through warm-up activities;

4) completing a post-training questionnaire three weeks after the training session.

The results of the pre- and post-training questionnaires were compared to establish causal links between the effectiveness of the training sessions and the teachers' perceptions of warm-up activities and active learning. Descriptive statistics were used to process the quantitative data and present them in percentages, while qualitative data were analyzed through the general inductive approach.

The study aimed to answer the following research questions:

RQ1: How familiar is the academic staff with warm-up activities?

RQ2: To what extent do course instructors begin classes/lectures with warm-up activities? and

RQ3: What effect does the active learning training session have on academic staff perceptions of the use of warm-up activities that promote active learning?

A combination of a qualitative and quantitative design was employed, as it enabled the participants to express their opinions and attitudes and to share their experiences using warm-up activities that promote active learning.

An assumption can be made that the participants, who had previously registered for the training, were more open-minded and receptive to learning about

and implementing warm-up activities in their classes to enhance active and student-centered learning. This, in turn, would lead to a more positive impact of the training session on their performance in the classroom.

Results

This section provides an overview of the results of the three questionnaires. The needs analysis was conducted prior to the training session in order to gain insight into the participants' profile regarding their knowledge of the concept of active learning in university courses. The data was later used to organize the training session. The academic staff who had registered for the training were asked to complete an online questionnaire consisting of 8 questions. The questions were divided into three sections: teaching experience of the course instructors, familiarity with the concepts of active learning and warm-up activities, and educational background related to teaching methodology courses.

The results of the needs analysis survey indicate that the course instructors who registered for the training on warm-up activities came from various faculties and departments: 5 teachers came from the Faculty of Education, five from the Faculty of Economics and Administrative Sciences, five from the Faculty of Humanities and Social Sciences, seven from the Faculty of Engineering, five from the Faculty of Law, one from the Faculty of Art and Design, one from the Faculty of Dental Medicine, and one from the Vocational Medical School. Regarding academic teaching experience, more than half of the respondents have been teaching at IBU or other universities for less than 5 years, 30% have been working in academia between 6 and 15 years, and only 20% of them have teaching experience of over 15 years.

Only one teacher is not certain about the meaning of the concept of active learning, and the same teacher has not heard about the term 'warm-up' activities, while three teachers are not sure about the meaning of this term.

Eleven members of the academic staff had teaching methodology-related courses during their undergraduate, graduate, or PhD studies. The following courses were mentioned: Teaching Methods, Teaching Methodology, Didactics, Natural Sciences Teaching Methodology, Languages and Art Teaching Methodology, Teaching Methods and Techniques in Teaching Turkish as a Foreign Language, Multidisciplinary Teaching Approaches, Research Advanced Teaching Methods in Architecture, Design Studio Pedagogy, Interactive Methodology, and Pedagogy. Nearly half of the

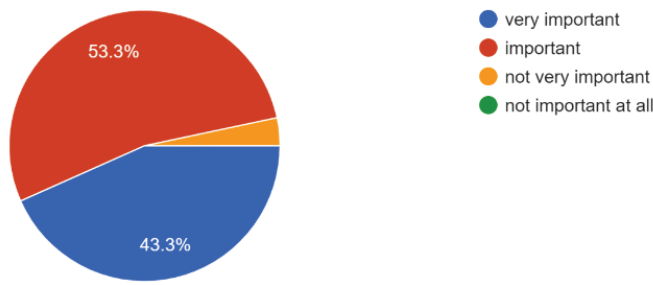
respondents have attended workshops or webinars on teaching methodology topics, and an equal number of them have taken pedagogy-related courses as part of their continuous professional development.

The pre-training questionnaire comprised eight questions, covering two aspects of warm-up activities: 1) their importance, effectiveness, and use in the classroom; and 2) evaluation of their advantages and disadvantages. The final question referred to the participants' expectations from the training session.

The first question provided information about the importance of warm-up activities, as Table 1 shows.

Table 1.

How important are warm-up activities for effective teaching?

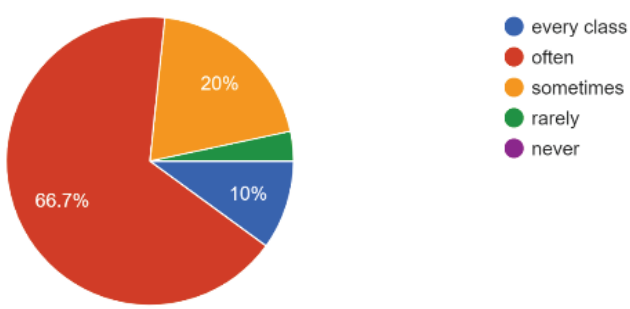


Most of the respondents believe that warm-up activities are very important or important, while only one teacher finds them unimportant.

The second question referred to the frequency of usage of warm-up activities at the beginning of a lesson (see Table 2).

Table 2.

How often do you use warm-up activities at the beginning of your classes?

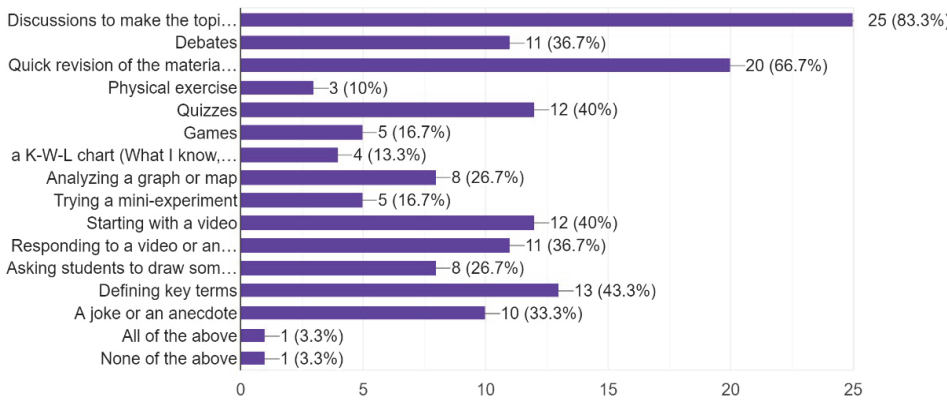


10% of the teachers start each lesson with a warm-up activity, while two-thirds often use such activities.

Question no.3 contained a list of the most common warm-up activities appropriate for university classes, as shown in Table 3.

Table 3.

Which of these warm-up activities do you use?



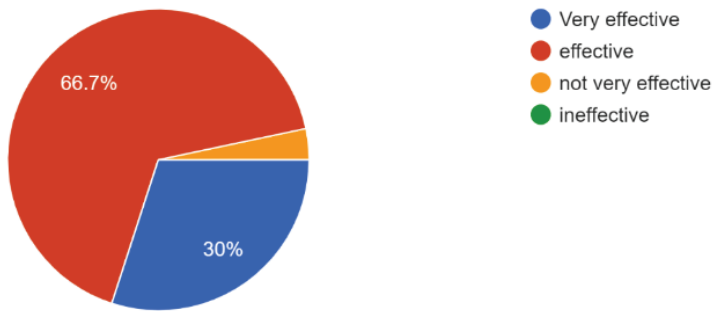
The most frequently used activities include discussions to make the topic more personal, followed by quick revision of the material taught in the previous lesson, definition of key terms, doing quizzes, and using a video or an image to introduce a topic. Additionally, teachers sometimes use jokes or anecdotes, debates, or ask students to draw something, analyze a graph, or map. They rarely use games, a K-W-L chart, or mini-experiments. It is worth mentioning that only three teachers begin their classes with a physical exercise or another TPR activity.

The fourth question was open-ended and asked teachers to list other warm-up activities they use in class. However, only 13 teachers provided answers to this question. The following warm-ups were listed: demonstrations, research-based exercises, ice-breaking activities, introspection, drawing concept maps, the pyramid technique, introducing their fellow students, asking students to write questions about the material taught in the previous lecture, finding the lie, sketching exercises, discussion on architectural news, architectural analysis, design challenges, brainstorming sessions, physical modelling, case analysis, completing contracts, and referring to famous movies that cover economic topics such as financial crises, bankruptcies, stock exchange, suspicious trading, or tax avoidance versus tax evasion. The fifth question aimed to investigate teachers' opinions on the effectiveness

of warm-up activities for enhancing students' motivation and attention. As indicated in Table 5 below, the majority of the respondents find warm-up activities to be either effective (67%) or very effective (30%) in fostering students' motivation and sustaining attention.

Table 5.

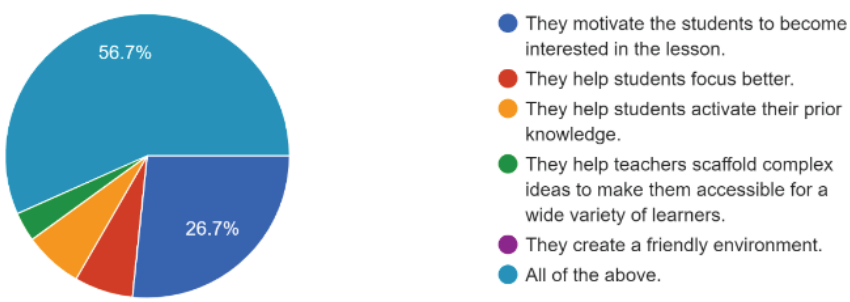
How effective are warm-up activities for your students' motivation and attention?



The purpose of the sixth question was to explore teachers' perceptions regarding the greatest advantage of warm-up activities. As the results in Table 6 show, the principal benefit is that they motivate students to become interested in the lesson. Additional advantages of warm-up activities include helping students focus better, activating their prior knowledge, and scaffolding complex ideas for various types of learners.

Table 6.

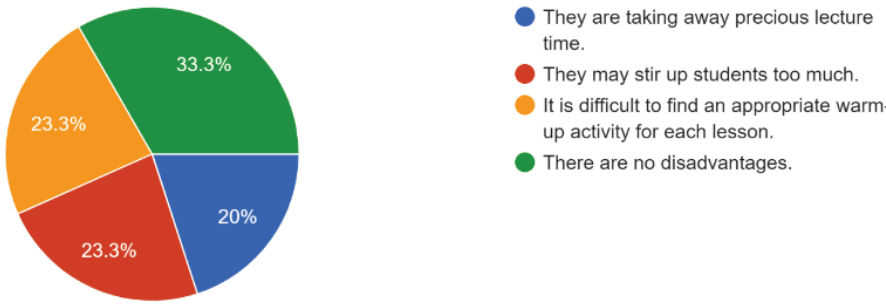
What is the greatest advantage of warm-up activities?



The seventh question reveals instructors' beliefs about the main drawbacks of warm-up activities, as can be seen in Table 7.

Table 7.

What is the greatest disadvantage of warm-up activities?



One third of the respondents believe there are no shortcomings, while the rest think they may either stir up students too much (23%) or that selecting a suitable activity for each lesson proves challenging. It is noteworthy that according to a fifth of the respondents, warm-up activities are shortening valuable instructional time. The final question revealed participants' expectations from the training session. These include enhancing their knowledge of the concepts of active learning and warm-up activities, and gaining additional ideas on such activities that could be used in class, particularly those involving the use of AI-powered tools.

The post-training questionnaire contained 8 questions, most of which are the same as the ones in the pre-training survey. The results are presented in Table 8 below.

Table 8.

Overview of the results of the pre- and post-training questionnaires

Question	Post-training questionnaire answers
1. Are you familiar with the terms 'active learning' and 'warm-up activities'?	a) Yes – 100% b) No – 0% c) Not sure – 0%
2. How important are warm-up activities for effective teaching?	a) Very important – 80% b) Important – 20% c) Not very important – 0% d) Not important at all – 0%

Question	Post-training questionnaire answers
3. How often do you use warm-up activities at the beginning of your classes?	a) Every class – 17% b) Often – 80% c) Sometimes – 3% d) Rarely – 0% e) Never - 0%
4. Which new warm-up activities did you try over the last three weeks?	TPR – 7 instructors a K-W-L chart – 5 instructors some of the suggested games in the training session – 8 instructors a quote – 4 instructors a video of a recent event – 5 instructors photos and AI-generated images – 7 instructors AI tools
5. How effective are warm-up activities for your students' motivation and attention?	a) Very effective – 80% b) Effective – 20% c) Not very effective – 0% d) Ineffective – 0%
6. What is the greatest advantage of warm-up activities?	a) They motivate the students to become interested in the lesson. – 20% b) They help students focus better. -6% c) They help students activate their prior knowledge.- 6% d) They help teachers scaffold complex ideas to make them accessible for a wide variety of learners – 0% e) They create a friendly environment. 0% f) All of the above – 66,7%

Question	Post-training questionnaire answers
7. What is the greatest disadvantage of warm-up activities?	a) They are taking away precious lecture time. – 10 % b) They may stir up students too much. - 15 % c) It is difficult to find an appropriate warm-up activity for each lesson.- 20% d) There are no disadvantages.- 55 %
8. Did you find the training session useful?	a) Yes – 80% b) Partially – 20% c) No

The results of the post-training questionnaire indicate a positive shift in the opinions and attitudes of the respondents towards the use of warm-up activities.

Discussion

The Teaching and Learning Center at IBU organized a training session on the promotion of active learning through warm-up activities. Participation was on a voluntary basis, and academic staff from different faculties registered. Academic staff from the field of medical and health sciences were the least interested in attending the training. This may be due to the nature of their classes, as they are always a combination of theory and laboratory or hospital practice, as well as the fact that the teaching staff from the Faculty of Dental Medicine and the Vocational Medical School are doctors who are also working in hospitals and clinics.

The results of the needs analysis suggest that the academic staff is familiar with the concepts of active learning and warm-up activities but lacks sufficient knowledge of teaching methodology. The pre-training questionnaire indicates that warm-up activities are valued and used by two-thirds of the course instructors. They use a variety of activities, and the most commonly used techniques are discussions and review tasks. The majority of the respondents perceived very few drawbacks of warm-ups; however, they expressed concerns about their usefulness, choice of appropriate activities, and maintaining student focus. The instructors would like to expand their knowledge of warm-up strategies, including innovative technology-enhanced techniques. The findings correspond with previous research, which

highlights the positive aspects of warm-up activities for student engagement, focus, and motivation (Joshi, 2006; Jensen, 2005; García & Martín, 2004). The analysis of the post-training questionnaire revealed that following the session, all the participants were acquainted with the concepts of active learning and warm-up activities, and their attitudes towards the importance of these activities had changed positively. They significantly increased the usage of warm-up activities and implemented the activities presented in class, particularly those involving AI tools such as ChatGPT for generating written prompts, digital storytelling chronicles, AI-generated images, and Total-Physical-Response (TPR) activities. This helped them change their perception of the positive aspects of warm-up activities, as they no longer believed that they lacked ideas or that warm-up activities were a waste of time. The staff were satisfied with the outcomes of the training sessions as they motivated them to use more warm-up activities, which in turn helped their students to be more engaged in class. In the future, the academic staff would like to receive training on increasing teacher-student and student-student interaction, inclusive and reflexive teaching practices, the implementation of AI technology in the classroom, inquiry-based learning, and experiential and cooperative learning.

The findings of the surveys provided answers to the research questions stated above.

RQ1: The academic staff at IBU is generally familiar with the terms active learning and warm-up activities. Only one instructor has not heard of these two terms, and 3 of them are not certain about their meanings. This implies that the respondents were generally acquainted with the terminology. Although the instructors are familiar with the terms, that does not imply they often use warm-up activities in their classes. The needs analysis showed that only a third of the instructors had a teaching-methodology related course during their university education, primarily those from the Faculty of Education, Architecture, and Visual Arts. Nevertheless, half of the academic staff compensate for the lack of such courses by attending workshops or webinars on teaching methodology topics.

RQ2: A small number of the course instructors begin all their classes/lectures with warm- up activities, and two-thirds often use them. The rest of the instructors rarely use such activities. This implies that the academic staff does not typically begin a lesson with a warm-up activity. This could be a result of the insufficient number of methodology related courses in all levels of tertiary education. Nearly half of the instructors either do not consider them effective or cannot find warm-up activities that would suit their students. Additional in-house training at universities could

support teaching staff and encourage them to consider implementing warm-up activities in the classroom.

RQ3: The training sessions on active learning and warm-up activities have a positive effect on academic staff perceptions of the use of warm-up activities that promote active learning. Hence, the instructors understood the significance of beginning each class with engaging warm-up activities, as they increase students' motivation for class participation and activate their prior knowledge. Furthermore, the academic staff gained ideas on possible warm-up activities and were more motivated and confident to use them in class.

To summarize, survey results provide evidence that although the majority of the academic staff are familiar with the concepts of active learning and warm-up activities and their importance in the classroom, they need additional training to change their perceptions thereof and to increase their confidence in implementing them in all their classes.

Conclusion

Academic staff in higher education institutions have been experiencing difficulties with implementing a more active and student-centred type of instruction (Dichter, 2001). Therefore, the study focused on investigating the perceptions of course instructors of the use of warm-up activities that promote active learning, as well as the effect of warm-up activities training sessions on the instructors' use of such activities in the university classroom. Survey results indicate that the staff from the Faculty of Education is well acquainted with this type of class activities, and they use them most frequently. Academic staff from other faculties lack pedagogical knowledge and thus prefer an individual and traditional approach to teaching. The organized workshop on active learning and warm-up activities showed that such training had a positive effect on teachers' motivation to use engaging warm-ups in their classrooms. Therefore, universities should organize training sessions and provide continuous support at an institutional level for all academic staff to promote the use of active learning activities.

Limitations

The study has two limitations. The first limitation refers to the non-probabilistic sampling method used for the selection of participants. The data and the

conclusions refer only to the 30 members of the academic staff who registered for the training. There are a total of 100 course instructors employed on a full-time basis at the International Balkan University. The academic staff who were not interested in attending the training sessions either believed they were effectively implementing warm-up activities or were reluctant to change their traditional teaching practice. If more participants were included, the results of the questionnaires may have been different.

The second limitation is the fact that all academic staff come from the same university. Universities differ in their policies regarding teaching quality, employment criteria, and students' educational backgrounds. This may affect the participants' choice of teaching methodologies and attitudes towards active learning.

Recommendations for Further Research

The study included academic staff from several fields. Consequently, no generalizations on warm-up activities can be made across all scientific areas. Therefore, further research could focus on effective strategies for active learning across various contexts in tertiary education. Furthermore, the pedagogical implications of the study indicate that university staff lack formal training in discipline-specific teaching methodologies. As a result, additional research could be done on designing professional development programs that focus on academic staff teaching skills or restructuring university study programs and adding teaching methodology courses. Finally, longitudinal studies could provide reliable information on long-term effects of the use of warm-up activities in university settings.

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