Pressing Play on Classroom Participation: A Study on Video-Enhanced Learning in Junior School Basic Science

Ariyibi, Olanrewaju Olasupo., Sadudeen, Moshood Abiola., Sanni Nimotalai Adeola., Mamudu Abdul Azeez., Hunsipe, Bolanle Misigbeto., Abdulkareem, Kaothara Mojisola

Department of Science and Technology Education, Lagos State University, Nigeria

DOI: https://dx.doi.org/10.47772/IJRISS.2025.903SEDU0517

Received: 22 August 2025; Accepted: 28 August 2025; Published: 27 September 2025

ABSTRACT

The main objective of the study was to assess the use of an online educational video platform called My Personal Teacher on how it can improve the participation in Basic Science for Lagos state junior schools educational district IV students. The research adopted a quasi-experimental design and used intact class to select a total of 60 students from a junior Secondary School in Educational District IV area of Lagos State, Nigeria. Two research questions were raised and corresponding hypothesis were postulated. The research used a classroom observation Text, which was administered and retrieved from student as Analysis was carried out using mean, standard deviation and simple t-test with the aid of SPSS v.25. Research findings revealed that students taught with MPT platform participated better than those taught with traditional method in Junior Secondary Schools. Also, there was significant gender difference in participation of students using the MPT platform. Based on the findings, it was concluded that E- learning platforms can improve students' participation in class. Among other recommendations, it was noted that teachers are to adopt E-learning online platforms for complementing teaching for the purpose of enhancing instruction and students' participation in Basic Science Classes.

Keywords: MPT platform, gender difference, academic participation, Basic Science

INTRODUCTION

Education can be defined as the act or process of acquiring knowledge, especially during childhood and adolescence. Education is the transmission of knowledge, skills and character traits. Education is also the process where and individual acquires or imparts basically knowledge to another. Education is an activity which takes place in any diverse venues and is intended can develop knowledge, understanding, valuing, growing, and be having. Education socializes children into the society by teaching cultural values and normal. It also equips them with skills needed to become important members of the society. Making reference to Adebanjo, Mohammed & Ariyibi (2025), there is so much concern in the alignment between the knowledge and skills students are expected to acquire in the classroom, their learning outcome and the demand of the society. As future professionals and engaged citizens, students are expected to be equipped with useful and productive skills to excel in their academics and also live sustainably in their society

A learning activity, in the form of an interaction between teacher and student and having specific goals is a major component in the learning process (Rahimi et al., 2021). In any effort to improve the quality of education, the quality of technology is one component that has a very important role. One of the efforts to improve the quality of education in schools is by improving the teaching and learning process with the aid of utilizing technological tools. Teaching and learning is impossible nowadays especially in a large classroom, without the use of various techniques based on modern ICTs. So for education to be more effective for teacher and student, technology has to be integrated into the instructional process, for example are some online educational platforms that make teaching and learning more easier (Bobou & Job, 2021).

E- learning can be viewed as computer assisted learning, and as pedagogy for student centered and collaborative learning. Early developments in e-learning focused on computer assisted learning, where part or all of the learning content is delivered digitally. More recently the pedagogical dimension of e-learning has become prominent. E-learning comprises all forms of electronically supported learning and teaching. The information and communication systems, whether networked learning or not, serve as specific media to implement the learning process.

E-learning include streaming videos and also technology application and processes such as Video tape, satellite TV, CD-ROM, information and communication system whether freestanding or based on either local network or the internet in networked learning. The advantage of learning of e-learning include the ability to cover a large distance between a teacher and a tutor. The opportunity for learning at self-pace with lots of repetitive repetition and social interactivity where learner can share their thoughts about what is being learned.

Most 21st century curricula and national policies on education across the globe recommend the use of computer and do their information communication technology facilities as essential tools in the education enterprise. It is for this reason that 21st century school facilities in the classroom now depend on ICTs facilities for various activities that takes place in them. The software is a set of programs necessary to carry out operation for specific job. These programs consist of step-by-step instructions telling how to carry out operations for a Specific job Gupta 2018.

An online educational platform or academic platform is a good example of utilizing E-learning for the purpose of teaching and learning. Online learning refers to the type of learning process where knowledge is gathered through the utilization of internet facilities (Fauzi & Khusuma, 2020). According to Nácher et al. (2021) an online educational platform in a virtual program whose function is to create virtual spaces to share information. These online educational platforms give the opportunity to learn without limit of space or time, reduce the work for the teacher, there is an ability to review the teaching material over and over again and give online exams using CBT (computer based test). These educational platforms encompasses all electronic learning concepts like E-learning, online learning, flipped class work, blended class work and learner-centered education.

Our education is also migrating to the internet. Online learning makes use of mobile and web based technologies to build highly interactive platforms where people and communities may share, co-produce, discuss, and modify content created by others. Traditional learning methods have recently been enhanced by new technologies. As a result, an increasing number of people are opting to develop their abilities through online learning. The majority of people believe it is advantageous, although others contend that it has drawbacks as well. Many people are looking for new ways to learn. Online learning is one of the most common approaches.

Online refers to the delivery of educational content and instruction through the internet. It allows students to take courses and earn degrees remotely without need to be physically present on campus. Online learning can take many various forms, such as web-based courses, video conference and self-paced learning programs. It becoming an increasingly popular way for students to access education, so as it offers flexibility and comfort.

Online learning is a technology that allows the teaching-learning process to become more student centered, inventive, and adaptable. Learning experiences in synchronous or asynchronous environments using various devices such as mobile phones and laptops with an internet connection is defined by online learning. Students can learn and communicate with professors and other students from anywhere (independent) in these contexts (Singh & Thurman, 2019).

Students attend live lectures, there are real-time interactions between educators and learners, and there is the prospect of quick feedback in the asynchronous learning environment. However, asynchronous learning settings are not well designed. Learning content is not available in live lectures or courses in such a learning environment, instead, it is available through various learning systems and forums. In such a setting, instant feedback and fast response are impossible. Synchronous learning can provide many social engagement opportunities (Littlefield, 2018).

The concept flipped classroom is also an excerpt from online learning. Flipped Classroom is used to define the interchange of homework and classroom activities (Sebullen, 2023). Flipped classroom is also known as a student-centered approach where the students are more active than the instinct in the classroom activity. In this case, the instructor acts as a facilitator to motivate, guide and give feedback on students' performance (Sams & Bergmann, 2013). The flipped classroom allows students to watch the video according to their preferred time and need and they can study at their own pace. This type of activity also increased student's collaborative learning in distance education outside the classroom. Thus, by flipping the class, the students will not spend much time listening to long lectures in the classroom but will have more time to solve problems individually or collaboratively through distance learning with peers.

Rendering Owoyemi, Ariyibi, Akindoju & Somade (2024), a flipped classroom is an instructional strategy and a type of blended learning, which aims to increase student engagement and learning by having pupils complete readings at home and work on live problem-solving during class time. With a flipped classroom, students watch online lectures, collaborate in online discussions, or carry out research at home, while actively engaging concepts in the classroom, with a mentor's guidance. The flipped classroom approach also contributes to better understanding of technology use in teaching and learning activities, students will use various technology media in learning activities independently, whereas the lecturer will use various technology media in their teaching practices (Kurt, 2017). Flipped classroom is one of the trends aiming to promote students' learning, motivation, engagement, higher-order thinking skills and experimental learning.

According to Ariyibi (2021), the flipped classroom purposefully moves guidance to a student focused model, in which the learners are frequently at first acquainted with new subjects beyond school, and before the real class is take in the school classroom saving home time for the exploration of points in more noteworthy understanding, setting out significant learning open doors. Content delivery in a flipped classroom can take many forms, including online collaborative discussions, digital research, and text readings, as well as video lessons prepared by the teacher or third parties.

The concept of Blended learning is also an excerpt of online learning. Blended learning is a hybrid traditional face-to-face classroom and e-leaning experiences. This type of learning is getting popular in many worldwide renowned universities for improving learning standards, increasing passing rate of examinations, adding flexibility and removing distance barrier. The idea of blending instructional materials with online intervention has proven to be an upgrade to face-to-face tradition mode and the fully mode of instruction. Because if done well, the approach combined the benefits affected by face-to-face and online mode of instructions (Broadbent, 2017). Blended learning reduces online transactional distance and increased the interaction between teachers and their students (Jusoff & Khodabendelou, 2009). Blended learning offers flexibility, pedagogical richness and increase in cost effectiveness (Graham, 2006).

Student centered learning is also called child-centered learning, It is an approach of education focusing on the interests of the students rather than those involved in the educational process, such as teachers and administrators. This approach has many inferences for the ways of the curriculum, course content and interactivity of courses. Student centered learning is focused on each student interests, abilities and learning styles placing the teachers as facilitator of learning. By definition, the student centered learning experience is not a passive one as it is based on the premise that student passivity does not support or enhance learning and that it is precisely active learning which helps students to learn independently (Machemer & Crawford, 2007). Student centered learning refers to learning that allows students to develop critical thinking and problem solving skills, foster independent learning and enable students to be responsible for learning and collaborate with other contacts.

For this research, the online platform adopted is called My Personal Teacher (MPT) is an online platform created to add more meaning to online learning. The platform contains instructional videos from all subjects from the official Scheme of Work used in the Secondary Schools in Lagos State and possibly all across Nigeria. The videos cover for all secondary school subjects ranging from General Subjects like Mathematics to English Language, Civic Education; Science subjects like Chemistry, Biology, Basic Sciences, Physics; Arts and Humanities like Economics, History; Commercial subjects like Business Studies, Financial Accounting and Commerce. These instructional videos are available for each class levels from JSS1–SS3. It can be reached on mypteacher.com.

Most people agree that a video lesson should be between eight and twelve minutes long. Class exercises differ yet may include: using mathematical Calculations and emerging mathematical technologies, in-depth laboratory experiments, original document analysis, debate or speech presentation, current event discussions, peer review, project-based learning, and skill development or concept practice. These kinds of active learning allow for highly differentiated instruction. More time can be spent in class on higher-order thinking skills like problem-finding, collaboration, design, and problem solving as students tackle difficult problems, work in groups, research, and construct knowledge with the help of their teacher and peers. All these are encompassing on the instructional videos available on the MPT platform.

The position of Basic Science as the bedrock for all science subjects in the senior secondary school has led to its inclusion in the school curriculum. Basic science formerly known as Integrated Science is the first form of science a child comes across at the secondary school level. Basic science is a core subject in the National curriculum at the upper basic level. Basic Science is a subject taken at the Basic Class 1-9, equivalent to Primary 1-6, then JSS1-3 of the Nigerian school system.

The 9-year Basic Science and Technology Curriculum according to Adeniyi (2001), is the product of re-alignment and restructuring of the revised curricula for Primary Science and Junior Secondary School Integrated Science. According to Agbidiye (2015), The subject prepares students at the upper basic level for the study of core science subjects like Biology, Chemistry and Physics at the senior secondary school level That is why Oludipe (2012) further emphasized that for a student to be able to study single science subjects at the senior secondary level successfully such a student has to be well grounded in Basic Science at the upper basic level. The two research questions raised for this were:

1. Do students taught Basic science with mypteacher.com online platform participate in class better than those taught with traditional method in junior secondary schools?
2. Do female students participate in class better than male students when taught basic science withy mypteacher.com online platform in junior secondary schools?

The corresponding null hypotheses to be tested where postulated as follows:

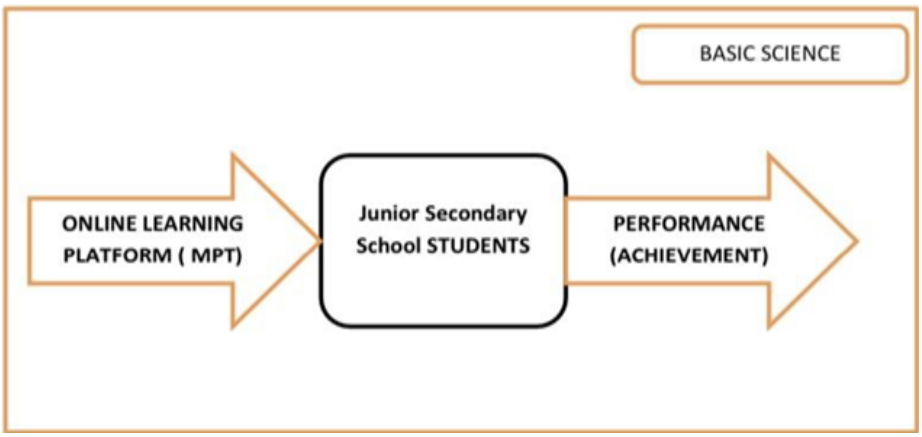
Ho1- There will be no significant difference in the participation of students taught Basic Science with MPT online platform and those taught Basic Science with traditional method in junior secondary school.

Ho2- There will be no significant difference between the participation of female and male student taught Basic Science with MPT platform in Junior Secondary Schools.

LITERATURE REVIEW

The concepts considered for review were E-learning, Academic Performance, effects of E-learning on Academic performance, flipped classroom, and blended learning. shows the Figure 2.1 conceptual Framework of the study.

E-Learning



Elena et al. (2021) asserted that e-learning is a technology that enables students to learn through web. Ahmed et al. (2020) defined e-learning as a formalized teaching using electronics technologies different from the traditional classroom and in most cases delivery of services is made to numerous recipients simultaneously. Egoigwe et al. (2020) defined e-learning as the use of information and communication technology such as internet, computer, mobile phone, radio and television to enhance teaching and learning activities.

E-learning offers a tremendous opportunity by the means of electronic and students can learn at their own pace. Traditional learning is expensive and takes a long time, and the results can vary (Manyaetal, 2018) E-learning offers an alternative that is faster, cheaper, and potentially better than traditional way of teaching. E-learning plays an important role in education as it changes the way students' think and study and can help students to grow with a better aptitude. Results in e-learning are better than Conventional Learning Approach. E-learning raises significant challenges to learners on technical part (Ranaetal, 2014). Technical challenges may include internet failure or internet do not work according to what academics require. Success in the implementation of E-learning educational system as one of the main approaches in managing knowledge and educational needs of higher education organization will not be achieved without identifying the different skill, technical and cultural challenges (Leilaetal, 2018). Cultural challenges should be identified before implementing e-learning because everyone has got their ways of learning based on their culture.

However, access to technology is not the same in all countries. The study of tertiary schools carried out by Mahdinejad & Amoii found that schools lack well-equipped computer labs. As a result, several colleges were unable to have the requisite ICT facility for the successful distribution of curricula. The main challenges of e-learning system adoption in developing countries, for example were a lack of ICT knowledge, poor network infrastructure, and a lack of content development (Aung & Khaing, 2015).

In E-learning, we define the usage of ICT to enhance learning by instructional preparation. However, E-learning entails the usage and use of a broad spectrum of resources and methods including e-mails, web pages, journals, social and business networking, and links to programs supplied exclusively electronically. Education channels may be numerous, but colleges of higher education deliver education services that utilize the Internet or the Network to enhance the academic success of students. E-learning is essentially a form of guidance and learning through the internet, the device or the stand alone personal computer, following.

ICT generates significant learning and academic success, by combining material and knowledge literacy, often in textual and visual ways. In other terms, integrating ICT into teaching practices has shifted teachers' position to track the training phase, through a centralized source of instructional materials. This improves self-reliance and faith in learning systems for students. Today, ICT awareness is highlighted as a medium for learning and education. Through the widespread usage of the Internet, the mass population of students is rendering information more available. The usage of ICT encourages the effective engagement of learners, enhancement of instruction, the easier use of teaching methods and resources in order to adapt to the interests and necessities of students, enabling students to monitor the timetable for learning and pace of execution of the learning plan.

The contemporary educational landscape is increasingly shaped by the integration of digital technologies, a shift that has moved e-learning from a niche concept to a central component of modern pedagogy (Singh & Thurman, 2019). This evolution is particularly evident in the rise of blended learning models, which combine traditional face-to-face instruction with technology-mediated experiences. Among the most potent tools in this model is the use of educational videos, which offer unique pedagogical advantages grounded in cognitive science.

According to Cognitive Load Theory, the human brain has a limited working memory capacity for processing new information. Instructional methods that overwhelm this capacity can hinder learning (Sweller, van Merriënboer, & Paas, 2019). Well-designed educational videos can mitigate extraneous cognitive load by presenting complex information in a structured, multi-modal format, combining auditory narration with visual cues. This allows students to process information at their own pace, with the ability to pause, rewind, and review content as needed, thereby optimizing cognitive resources for deeper understanding.

The pedagogical value of video extends beyond individual learning to directly influencing classroom dynamics. The "flipped classroom" model, for instance, utilizes pre-recorded video lectures to deliver foundational content outside of class. This strategic shift frees up valuable in-class time for higher-order activities such as problem-solving, collaborative projects, and in-depth discussions, which are the cornerstones of active student participation (Sebullen, 2023). When students arrive in class already primed with essential knowledge from a video, they are better equipped and more confident to ask insightful questions and engage meaningfully with their peers and instructor.

However, while the theoretical benefits of video-enhanced learning are well-documented, there is a need for more context-specific empirical research. Much of the existing literature focuses on higher education or resource-rich Western contexts. A significant gap exists in understanding the impact of specific e-learning platforms, such as 'My Personal Teacher,' on the participation levels of junior secondary school students in Nigeria. This study, therefore, aims to contribute empirical evidence on how a targeted, video-based intervention can influence classroom participation in Basic Science within the unique educational environment of Lagos State.

Classroom Participation

The classic conception of class participation, which is limited to verbal interactions, has been overtaken by a much broader view, including anything that causes students to be more involved in active learning forms (Orwat et al., 2018). Onah & Ugwu (2010) defined classroom participation as a process whereby students speak in class, answer and ask questions, make comments and join in classroom discussions. It has to do with the ability of students to actively engage in classroom activities which helps to facilitate learning and bring about improved academic achievement. Students can be active participants in class activities by answering questions voluntarily, demonstrating at the chalkboard, spontaneously offering their ideas and thoughts, communicating with peers or the teacher about tasks and completing written works.

According to College Students' Journal (2006), classroom participation is a way of creating an environment in which all the students in the class are given the opportunity to learn and explore issues and ideas in-depth from a variety of viewpoints. Classroom participation which involves listening, questioning, responding and general classroom interaction is a pattern of learning which students must adopt as this helps to increase the chances of learning from others and also allows others to learn from them, thus, getting new ideas from different perspectives which makes the learning of physics interesting. It is important to note that active participation in physics class enables students to learn and practice new knowledge and strategies. Although studies on classroom participation have been carried out but most of them were on Biology, Literature-in-English and Social Studies, only a few were done on Physics.

The level of students' interest in a subject is another influential variable that determines their achievement. Interest can be seen as the ability of students to react in a positive manner towards certain things. It is also a feeling of wanting to learn more about something or to be involved in something which is exhibited by students and this brings about curiosity. It is important to note that humans are not born with interest but it develops with time. Interest is a crucial factor in learning which brings about effective learning of a particular concept (Adam & Gary, 2011). Students with high interest towards a subject perform better than those who have little or no interest in that subject. It has been observed that students' level of interest can be influenced by either positive or negative attitudes. George (2006) asserted that the development of positive attitudes towards science can motivate students' interest in science education and science-related careers, hence, enables the students to work hard and attain better achievement. Consequently, negative attitude towards a subject reduces students' interest which makes learning difficult.

Class participation is a multidimensional concept that comprises many aspects that suggest evidence of student engagement, such as preparation prior to class (Dancer & Kamvounias, 2005; Hard & RaoShah, 2022), attendance (Dancer & Kamvounias, 2005; Fritschner, 2000; Hard & RaoShah, 2022), contribution to class activities and discussions (Dallimore et al., 2010; Dancer & Kamvounias, 2005; Fritschner, 2000; Xu & Qiu, 2022) and frequent small tasks (Challis et a., 2010; Tang et al., 2020). Past research shows that these activities

lead to personal and professional growth in students (Jones, 2008), result in a better understanding and retention of the material (Precourt & Gainor, 2019), enable students to demonstrate a broader range of skills (Richardson, 2015) and improve students' performance (Paisey & Paisey, 2004; Papageorgiou, 2019; Precourt & Gainor, 2019). Furthermore, class participation is a motivational tool that has been proven to increase engagement and thus enhance students' achievement (Fredricks et al., 2019; Martin et al., 2017), while disengagement and poor motivation lead to obstacles to learning (Liem & Chong, 2017). Educators and researchers due to the alarming examination performance of students.

Effect of E-Learning on Classroom Participation

Students are more likely to be more motivated when applying e-learning (Safiyeh, 2015). Active class participation can help students better understand the material being taught. When students ask questions or share their ideas, they can clarify concepts that may have been confusing before. This is because students are in charge of their learning and in the process, they discover a lot of things on their own and group discussion is enhanced. Group discussion is important as students share ideas and they give each other responsibility of understanding topics. Within their group of discussions, what is important for students is to identify challenges they face in each topic so that lecturers can come in. Success in the implementation of e-learning educational system as one of the main approaches in managing knowledge and educational needs of higher education organization will not be achieved without identifying the different skill, technical and cultural challenges(Leila etal., 2018).E-learning offers a tremendous opportunity by the means of electronic and students can learn at their own pace.

Traditional learning is expensive and takes a long time, and the results can vary (Manyaetal., 2018).E-learning offers an alternative that is faster, cheaper, and potentially better than traditional way of teaching. E-learning plays an important role in education as it changes the way students' think and study and can help students to grow with a better aptitude.

Flipped Classroom

Flipped classroom was invented in 2007 by Jonathan Bergman and Aaron Sams when they began recording their classroom lectures so that students could access them at home. Flipped Classroom is used to define the interchange of homework and classroom activities (Sebullen, 2023). A flipped classroom is an instructional strategy and a type of blended learning, which aims to increase student engagement and learning by having pupils complete reading at home and work on live problem-solving during class time. With a flipped classroom, students watch online lectures, collaborate in online discussions, or carry out research at home, while actively engaging concepts in the classroom, with a mentor's guidance.

What do Students do at Home in a Flipped Classroom

With flipped classroom, students watch an online lecture, review online course material, read physical or digital texts, participate in an online discussion, perform research. In a Flipped Study hall, expertise practice; directed or unguided by the instructor, Face to face, eye to eye conversation with peer, debate, presentation, Station learning, Lab tests, Peer evaluation and survey are the things to be done. This duplicates understudy admittance to educators once with the recordings at home, and again in the study hall, expanding the chance for personalization and more exact directing of learning. Students practice under the teacher's supervision while independently accessing content in the flipped classroom model.

A side advantage is that instructors can record addresses that underscore basic thoughts, power guidelines, and, surprisingly, the speed of a given educational program map. Additionally, it provides students with the ability to pause, rewind, Google terms, re-watch, etc., as well as making an instant library for understudy survey, make-up work, and so on. Flipped classroom videos may provide the same advantages as recorded lectures in class. When pre-class materials are made free, understudies can return and survey those assets to more readily plan for tests and tests. The capacity to look for words or expressions in the accounts or play the accounts at variable rates likewise assists students with rapidly pinpointing specific segments of the video.

Blended Learning

Blended learning is a hybrid traditional face-to-face classroom and e-leaning experiences. This type of learning is getting popular in many worldwide renowned universities for improving learning standards, increasing passing rate of examinations, adding flexibility and removing distance barrier. The idea of blending instructional materials with online intervention has proven to be an upgrade to face-to-face tradition mode and the fully mode of instruction. Because if done well, the approach combined the benefits affected by face-to-face and online mode of instructions (Broadbent, 2017).

Blended learning reduces online transactional distance and increased the interaction between teachers and their students (Jusoff & Khodabendelou, 2009) Blended learning offers flexibility, pedagogical richness and increase in cost effectiveness (Graham, 2006).

Mypteacher.com

This is a platform that gives admittance to Educational Recordings for Instructing and Learning of all subjects in Junior and senior secondary schools as per the Plan of Work in Lagos State and Nigeria. Every Recordings give context oriented clarification of ideas to assist student with seeing a greater amount of what they are shown in schools and improve learning results emphatically. This platform is additionally advantageous for students of secondary schools who have intention to perform better and have access to class materials from their homes. It be accessed on www.mypteacher.com .

METHODOLOGY

The question experimental research design was adopted for this study. The research design delved into discovering the significance between variables. The targeted population of this study consists of all students in the junior secondary school level TWO (2), of all schools in Educational District IV. The sample of the study was 60 students selected from public Junior Secondary Schools in One randomly picked schools from the Education District IV. The sampling technique for the students was done using intact class method.

There was just one instrument used for gathering data in this study. The research instrument used for this study was the Checklist. The Checklist was a set of question design for the subject Basic Science student in public junior secondary school 2. The Checklist was titled Basic Science Classroom Observation Checklist (BSCOC). It consist of 10 questions curled from the topic (Drug) which the students watched its video online from their homes. The structured observation tool developed by the researchers specifically for this study was designed to quantitatively measure the frequency and quality of student participation in the Basic Science classroom.

The instrument was organized around five key indicators of active student engagement:

1. Student-Initiated Questions: Tallying the number of relevant, on-topic questions asked by students.
2. Responses to Teacher Prompts: Recording the frequency of both voluntary and solicited answers to questions posed by the teacher.
3. Collaborative Engagement: Noting instances of students engaging in on-task discussions with peers during group activities.
4. Demonstrative Participation: Counting the number of times a student volunteers to solve a problem on the board, use a scientific apparatus, or explain a concept to the class.
5. On-Task Behaviour: A timed measure observing the proportion of students appearing attentive, taking notes, and following the lesson versus those showing signs of disengagement.

To ensure the reliability and validity of the BSCOC, a rigorous validation process was undertaken. Firstly, face and content validity was conducted as the initial draft was submitted to a panel of three experts: two senior Basic Science teachers from the Educational District IV area and one specialist in educational measurement from Lagos State University. The experts reviewed the items for clarity, relevance, and coverage of the construct of "classroom participation." Their feedback led to the refinement of two indicators and the rewording of the observation criteria to enhance clarity.

Secondly, inter-rater reliability was conducted to establish the consistency of the observation data, a pilot test was conducted in a junior secondary school not part of the main study. Two of the researchers independently used BSCOC to observe the same Basic Science lesson instructional video. The resulting scores were then correlated using Cohen's Kappa statistic. The analysis yielded a Kappa coefficient of k = 0.87, indicating a high degree of agreement between the raters and confirming the instrument's reliability for the main study.

The adopted platform for online teaching and learning was the My Personal Teacher platform. The platform consists of Videos on the subject Basic Science. The topic Drug (Drug), was a first term topic in week six of the School scheme of work. This platform can be accessed on www.mypteacher.com. The link of the video was shared with the students to be watched at home. Hence, the students were grouped into control and experimental group, the control group being the students who could not have access to the videos from home.

Research Implementation

The subject teacher first of all did a sitting arrangement by identifying the students who were able to watch the video (Experimental Group), then separated them to sit on a different rows, while the students who could not have access to the platform were also made to sit on the other rows (control group). Then, the subject teacher taught the class using the traditional lecture method while the researcher was observing the class proceedings. During the teaching the partner of the researcher was recording a video in order to help in ticking the Basic Science Observation Checklist items. On completion of the task, the researcher collected the achievement test and thanked the participants. Lastly, on collation of the data collected form the participants; the class had a total of 60 students of which 28 students were the experimental group and 32 students as the control group.

Data Collections and Data Analysis Technique

The field work for data collection was completed in two weeks. In the first week, a letter of introduction (see appendix ii) was collected from Lagos State University and submitted at the Educational District IV Office. The consent approval was accepted, and then was presented to the School Administrators, the principal precisely. Going further, the principal approved for the researcher to proceed to the classroom. The school calendar was on the first term, week 5 of the 2022-2023 secondary school academic sessions, the class used for the study was junior secondary school 2.

In the classroom, the researcher did the introduction and then introduced to the students the process of the research. When the students confirmed their understanding of the process, the researcher first allocated a class number to the students for data identity from numbers one till the last student. The Instrument used for this study was the Observation Checklist; The Observation Checklist was a set of question design for the subject Basic Science student in public. The Observation Checklist was titled Basic Science Classroom Observation Checklist (BSCOC). The researcher shared the link of the video through the mypteacher.com Website to the students. The link was https://mypteacher.com/2023/06/06/week-5-drug-abuse-ii/. This link contained the video teaching the topic that the teacher was to teach the in the next class.

Also, to motivate the students, the researcher gave a jotter as a gift to all the students so as to use to jot down points on whatever they learned from watching the video. In the following week which was the second week of field work, the researcher arrived at the school on the agreed day and classroom where the teaching of the topic took place. The research question was analyzed using descriptive statistics of mean and standard deviation while the research hypotheses were analyzed using one sample T-Test. The statistical package for social science (SPSS) Version 25.0 was used for analysis in order to minimize any internal error.

RESULTS

Table 1 shows that there were a total of 60 participants, with 32 students in the experimental and 25 students in the control group. There were 35 male and 25 female in total, the experimental group were 17 male and 11 female while the control group had 18 male and 14 female respectively.

Table 1: Biographic Data of participants

Gender	MPT Group	Traditional method	Total
Male	17	18	35
Female	11	14	25
Total	28	32	60

Table 1 shows that there were a total of 60 participants, with 32 students in the experimental and 25 students in the control group. There were 35 male and 25 female in total, the experimental group were 17 male and 11 female while the control group had 18 male and 14 female respectively.

Research question one stated that do students taught Basic Science with mypteacher.com online platform participate better than those taught with traditional method in Junior Secondary schools?

One-sample statistics

Table 2: Descriptive statistics of students taught with MPT online platform and traditional method.

GROUP	N	Mean	Std. Deviation	Std. Error Mean
MPT Group	28	2.8000	.63246	.20000
Traditional Group	32	2.6000	.84327	.26667

Source: SPSS v.25

Table 4.2 shows that 32 student representing mean score of 2.6 with standard deviation of 0.84 of the respondents that were taught with the traditional method while 28 students representing mean score of 2.8 with standard deviation of 0.63 of the respondents were taught with MPT platform. This means that most of those that use the MPT platform participated better than those taught with traditional method.

Research Question 2: Do female students participate better than male students when taught Basic Science with mypteacher.com online platform at the Junior Secondary Schools?

One-sample Statistics

Table 3 Descriptive statistics of students based on gender

GENDER	N	Mean	Std. Deviation	Std.error Mean
MALE	17	17.5000	.70711	.50000
FEMALE	11	12.5000	2.12132	1.50000

Source: SPSS v.25

Table 3 shows that 11 female students in the MPT group representing mean score of 12.50 with standard deviation of 2.12, while 17 male students representing mean score of 17.00 with standard deviation of 0.70.This mean that male participated better than female because they have the higher value of mean and a standard deviation.

The null hypothesis Ho1: There will be no significant difference in the participation of students taught Basic Science with MPT online platform and those taught Basic Science with traditional method in junior secondary school.

Table 4: Difference in the participation of students

One-Sample Test							
	TestValue=3						
	t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
			One-Sided p	Two-Sided p		Lower	Upper
MPT Group	-1.000	9	.172	.343	-.20000	-.6524	.2524
Traditional Group	-1.500	9	.084	.168	-.40000	-1.0032	.2032

Significant at 0.05. Source: SPSS v.25

Table 4 shows that there was significant difference in the participation of students taught Basic Science with MPT platform and those taught Basic Science with traditional method in Junior Secondary Schools.

Hence the null hypothesis which stated that there will be no significant difference in the classroom participation of students taught Basic Science with MPT platform and those taught Basic Science with traditional method in Junior Secondary Schools is hereby rejected.

The null hypotheses Ho2-There will be no significant difference between the participation of female and male student taught Basic Science with MPT platform in Junior Secondary Schools.

Table 5: Difference in the participation of students

One-Sample Test							
GENDER	Test Value=30						
	t	df	Significance		Mean Difference	95% Confidence Interval of the Difference	
			One Sided p	Two-Sided p		Lower	Upper
MALE	35.000	1	.009	.018	17.50000	11.1469	23.8531
FEMALE	25.0000	1	.038	.076	12.50000	-6.5593	31.5593

Significant 0.05. Source: SPSSv.25

Table 5 shows that there was a significant difference between the participation of female and male student taught Basic Science with MPT platform in Junior Secondary School. Hence, the null hypothesis which stated that there is no significant difference between the participation of female and male student taught Basic Science with MPT platform in Junior Secondary Schools is hereby rejected.

DISCUSSION

This research focused on the effect of an online educational video platform, My Personal Teacher on the performance based on participation of Junior Secondary School students in Basic Science in this study, it was found out that students who were taught Basic Science with MPT platform performed better with higher grades of participation in class than those taught with traditional lecture method in Junior Secondary Schools. This finding on students' high grade participation by using the online instructional videos platform is in agreement with the findings of Ariyibi (2021) who used the concept of instructional videos as flipped classroom to teach students on production of instructional materials.

This finding is also corroborated by Rezaee et al. (2022) who investigated the effect of case-based e-learning (CBEL) on nursing students' academic Performance and problem-solving skills. The findings demonstrated that the CBEL method positively impacted students' ability to solve learning problems and academic Performance. There is significant impact of gender in academic performance of students in Basic Science using MPT platform as the female students who used the MPT platform performed better than the male students who used the same platform. This finding is in agreement with findings of Ismail etal. (2018) pointed

out that the students' characteristics, including gender, age, status, and ethnicity are among the most significant factors influencing academic performance.

According to Panigrahi etal. (2018), numerous studies have shown online learning to boost student involvement, improve conversation quality, and stimulate online connections. The discussion forum could help students and increase their learning by resolving challenges. Mobile technology such and PCs could make it easier to access an online learning platform and improve the effectiveness of mobile learning. This finding is also corroborated by Rezaee et al. (2022) who investigated the effect of case-based e-learning (CBEL) on nursing students' academic Performance and problem-solving skills. The findings demonstrated that the CBEL method positively impacted students' ability to solve learning problems and academic Performance. Although, the finding was a bit in disagreement with the findings of (Tegegne, 2014), that there were no statistically significant differences between the students' marks using traditional learning and the students' scores using ICT supported learning. The reason for the different results may be due to the nature of some subjects that are better taught traditionally rather than relying on information and communications technology.

The findings of this study indicate that the integration of the 'My Personal Teacher' (MPT) e-learning platform led to a statistically significant improvement in student participation in the Basic Science classroom. This result aligns with the theoretical propositions of Cognitive Load Theory (Sweller et al., 2019), suggesting that the platform's video-based content likely presented complex scientific concepts in a more digestible and engaging manner than traditional lecture methods. By allowing students to visualize abstract processes and review information independently, the intervention may have lowered cognitive barriers, thereby boosting their confidence and willingness to actively engage during in-class sessions.

Furthermore, the study revealed a significant gender-based difference in participation among students in the experimental group. This finding suggests that the video-enhanced learning approach may be experienced differently by male and female students. While this study did not investigate the underlying causes, possible factors could include variations in digital literacy, learning preferences, or the specific content and presentation style of the MPT platform. This highlights a critical area for further investigation into how e-learning tools can be designed and implemented to be equally engaging for all students. This is similar to the findings of Njoku, Otun & Ariyibi (2020) which stated that there are no significant gender differences in acceptability, usability and academic performance of learners in the use of hypermedia in teaching and learning, consequently reducing the gender gap in science and technology.

Lastly, the finding was a bit in disagreement with the findings of (Harvey, 2017), He mention that there are no significant gender differences in learning outcomes based on learning styles discovered. (Ismail 2018) pointed out that students characteristics, including gender, age, status, and ethnicity are among the most significant factors influencing academic performance. Gender influences on online learning outcomes are debatable.

LIMITATIONS

The conclusions of this research should be considered in light of its limitations. The study had the limitation of randomization of the sample as the students for the study could not be selected randomly; therefore adopting Quasi-experimental research was used to cover the situation. Also, not all students could have gadgets that could give them access to the online platform. Lastly, there might have been in interaction effect between the students who were able to use the online platform and those who could not. Specifically;

1. Sample Size and Scope: The study was conducted with a relatively small sample of 60 students from a single school in one educational district. This limits the generalizability of the findings to the wider student population in Lagos State or Nigeria.
2. Duration of Intervention: The quasi-experimental design was implemented over a limited timeframe, which may not be sufficient to capture the long-term effects of sustained engagement with the e-learning platform.
3. Novelty Effect: The increased participation observed in the experimental group could be partially attributed to the novelty of using a new technology, and engagement levels might change over a longer period.

CONCLUSION

The main objective of the study was to assess the use of an online educational video platform called My Personal Teacher on how it can improve the academic participation of Junior Secondary School students in Basic Science. The research adopted a quasi-experimental design and used intact class to select a total of 60 students from a Junior Secondary School in Educational District IV area of Lagos State, Nigeria. Two research questions were raised and corresponding hypothesis were postulated. The research used an achievement test titled Basic Science Observation Checklist Analysis was carried out using mean, standard deviation and One sample T-Test with the aid of SPSS v.25. Research findings revealed that student taught with MPT platform performed better than those taught with traditional method in Junior Secondary Schools. Also, there was significant gender difference in academic performance of students in Basic Science using the MPT platform. Based on the findings, it was concluded that E-learning platforms can improved students' participation in class.

This study set out to investigate the impact of a video-enhanced learning platform on classroom participation among junior secondary school students in Lagos, Nigeria. The results provide strong evidence that leveraging e-learning tools like 'My Personal Teacher' can be an effective strategy for transforming passive listeners into active participants in the science classroom. The intervention not only enhanced overall participation but also brought to light important considerations regarding gender and engagement with digital learning tools.

RECOMMENDATION

Based on the findings of the present study the following recommendations were made:

For Teachers:

- Basic Science teachers are encouraged to adopt a blended approach, using video resources to introduce topics and dedicating more class time to hands-on activities, experiments, and collaborative discussions that promote active learning.

- Basic Science teachers should try to apply the online videos learning strategy in the teaching of Basic science as this was found to impact on the students' participation positively. This is because it is an innovative approach and has the potential to motivate learner toward learning science and technology.

- Teachers of Science subjects should be encouraged to adopt and improve on their usage of computer package in the classroom to enhance the academic participation of science students.

For Experts:

- Experts in Educational Technology should be involved in the training and retraining of teachers through seminars, workshops and conferences on the usage of Online video platforms like MPT platform or any other useful electronic platforms for better students' participation.

For Policy Makers:

- The Ministry of Education should consider investing in digital infrastructure and promoting the integration of validated e-learning platforms as a supplement to conventional teaching methods in Basic Science.

For School Administrators:

- School leaders should prioritize professional development for teachers, equipping them with the skills to effectively implement blended learning models and utilize digital tools to foster an interactive classroom environment.

- For Future Research: Further research is needed with larger, more diverse samples across multiple schools to validate these findings. Future studies should also explore the qualitative aspects of participation and

investigate the specific factors contributing to the observed gender differences in engagement with e-learning platforms.

REFERENCES

1. Abuhassna, H., AlRahmi, W. M., Yahya, N., Zakaria, M. A. Z. M., Kosnin, A. B., & Darwish, M. (2020). Development of a new model on utilizing online learning platforms to improve students' academic achievements and satisfaction. International journal of educational technology in highereducation, 17 (1),1-23.
2. Adebanjo, S. A., Mohammed, A. O. & Ariyibi, O. O. (2025). Developing Problem-Solving Skills in Students through Instructional Scaffolding. Asian Journal of Assessment in Teaching and Learning Vol 15, Issue 1, 2025 (36-48)
3. Adeniyi, E. O. (2001). Strategies for introducing new curriculum in West Africa: The Situation in Nigeria. Retrieved from http:// www.erif.ed.gov.
4. Agbidiye, A. (2015). Challenges and Prospects in the Teaching of Basic Science at the Upper Basic Level in Nigeria. Journal of Qualitative Education, Volume 11 No. 1.Pp 1-8: ISSN0331-4790
5. Alghamdi, A., Karpinski, A. C., Lepp, A., & Barkley, J. (2020). Online and face-to- face classroom multitasking and academic performance: Moderated mediation with self-efficacy for self-regulated Learning and gender. Computers in humanbehavior,102, 214-222
6. Amadora, M. (2020).Common problems that occur during online classes.
7. Ariyibi, O. O. (2021). Effect of Flipped classroom strategies on university students' performance in the production on Instructional materials in Lagos State, Nigeria..
8. Bana, K. F. M. A., Ilyas, F., Sadia, H., Hakeem, S., & Kadri, W. B. (2021). Effects of e-learning on academic performances experimental study. Rawal Medical Journal, 46(4), 967-969.
9. Bantog, J., Malabay, G. M., Santibanez, A. M., Tus, J. (2022). Amidst the online learning Modality: The self-efficacy and its relationship to the academic burn out of senior high school Students. Psychology and education: A Multi disciplinaryJournal,1(3),174 184https://doi.org/10.5281/zenodo.6654318
10. Belgica, C. C., Calugan, J. A., Dumo, J. U. & Simber, L. (2020). Online distance learning Thematic study on the challenges faced by Educare college in primary pupils. In Proceedings of the 3rd international conference on advanced research in education, Teaching & Learning, Oxford, UK (pp.18-20).
11. Bobou, G. & Job, G. (2021). Benefits, Challenges and Prospects of Integrating E-Learning into Nigerian Tertiary Institutions: A mini review. International Journal of Education and Development using Information and Communication Technology (IJEDICT) Vol.17, Issue 3, pp. 618
12. Carmichael & Steyn. (2020). Distance education for teacher training: Modes, models, and methods.
13. Challis N., Robinson M., Thomlinson M. (2010). Coursework, what should be its nature and assessment weight? MSORConnections, 10 (2), 3134.https://doi.org/10.11120/msor.2010. 10020031
14. Cruz, A. D., Francisco, J., Manalo, J., Tus, J. (2022). Amidst the online learning modality The Self-Efficacy and its relationship to the perceived Loneliness of senior high school students Psychology and Education: A Multidisciplinary Journal, 1 (2), 163173.https://doi.org/10.5281/zenodo.6523253
15. Cung, B., Xu, D., & Eichhorn, S. (2018). Increasing Interpersonal Interactions in an Online Course: Does Increased instructor email activity and voluntary meeting time in a physical Classroom facilitate student learning? Online Learning, 22 (3), 193-215
16. Dabbagh, N., & Castaneda, L (2020).The PLEasa framework for developing agency in life-long learning. Educational Technology Research andDevelopment, 68 (6), 30413055
17. Dallimore E. J., Hertenstein J. H., Platt M. B. (2010). Class participation in accounting courses: Factors that affect student comfort and learning. Issues in Accounting Education, 25 (4), 613–629.https://doi.org/10.2308/iace.2010.25.4.613
18. Dancer D., Kamvounias P. (2005). Student involvement in assessment: A project designed to assess class participation fairly and reliably. Assessment & Evaluation in Higher Education, 30 (4), 445 454.https://doi.org/10.1080/02602930500099235
19. Davis, N. L., Gough, M.,&Taylor, L.L.(2019).Online teaching: advantages, obstacles and tools for getting it right. Journal of teaching inTravel & Tourism, 19 (3), 256-263

20. Dove, C. A. (2020). Online Learning challenges for our US Veterans Unable to Physically Attend College (Doctoral dissertation, Walden University). Entrepreneurship and sustainability issues 8(2), 972-983(2020)
21. Eltahir, M. E. (2019). E-learning in developing countries: Is it a panacea? A case study of Sudan IEEE Access, 7, 97784-97792.
22. Espayos, K., Llevado, L. J., Meneses, L., Tus, J., (2022). Amidst the Online Learning Modality: The Self-Esteem and its relationship to the academic Burn out of the senior high School Students. Psychology and Education: A multidisciplinary journal, 2 (1), 1419.https://doi.org/10.5281/zenodo.665441245
23. Fritschner L. M. (2000). Inside the undergraduate college classroom: Faculty and students differ on the meaning of student participation. The Journal of Higher Education, 71(3), 342–362.https://doi.org/10.2307/2649294
24. Gadakchyan A., etal., E3S Web of Conferences210,18015(2020)
25. Hamouda, A. (2013). An exploration of causes of Saudi students' reluctance to participate in the English Language classroom. International Journal of English Language Education, 1(1), 17 -34. https://doi.org/10.5296/ijele.v1i1.2652
26. Howard, J. R., Henney, A. L. Student participation and instructor gender in the mixed-age college classroom. Journal of Higher Education. 1998; 69: 384405.
27. Ismail, A. O., Mahmood, A. K., & Abdel maboud, A. (2018). Factors influencing Academic Performance of students in blended and Traditional Domains. International journal of emerging technologies in learning, 13 (2).
28. Jacob, B. (2019).Online learning, offline outcomes: Online course taking and high school student performance. AeraOpen, 5 (1), 2332858419832852.K.M.,
29. Jones R. C. (2008). The "why" of class participation: A question worth asking. College Teaching, 56 (1), 59–63.https://doi.org/10.3200/ctch.56.1.59-64
30. Karima, H. (2016). An investigation of the difficulties that prevent EFL learners from participation. [Unpublished Master Thesis].https://e-biblio.univ-mosta.dz
31. Lederman, H. (2018). Online Education worldwide status, Challenges, Trends and implications.
32. Littlefield, J. (2018). The difference between synchronous and asynchronous distance learning. Retrieved from https://www.thoughtco.com/synchronous-distance-learning-asynchronousdistance learning-1097959.
33. Njoku, O. G., Otun, I. W. and Ariyibi, O. O. (2020). Gender as a Predictor of Learner Acceptance, Usability and Academic Performance When Taught With a Hypermedia Learning Package in Biology. Interdisciplinary Journal of Gender and Women Development Studies Special Edition 2020 Vol. 3 No. 5. P 129-139
34. Ogunleye, B. O. & Sowunmi, E. B. (2020). Evaluation of Basic Science Curriculum Implementation in Junior Secondary Schools in Lagos, Nigeria.
35. Oludipe, D. I. (2012). Gender difference in Nigerian Junior Secondary Students' academic achievement in Basic science. Journal of Educational and Social Research, 2 (1), 93-99.
36. Onah, D. U. & Ugwu, E. I. 2000. Factors which predict the performance in secondary school physics examination in Ebonyi North Educational Zone. ESUT, Nigeria.
37. Orwat J., Kumaria S., Spira M., Boyle L., Besinger A. (2018). Class participation as a pedag ogical tool in social work education. Social Work Education, 37 (3), 361–377.
38. Owoyemi S. O., Ariyibi, O. O., Akindoju O. G., & Somade M.A. (2024). Impact of Online Flipped Classroom on the Academic Performance of Students in Tertiary Institutions, Ogun State. Educational Perspectives, 12(3), 228-234. Retrieved on 23rd of August, 2025 from https://www.researchgate.net/profile/Modupe-Olajide-2/publication/381650620 Educational Perspectives Volume 12 Issue3/links/66787f49d21e220d89cbaad3/Educational-Perspectives-Volume-12-Issue-3.pdf#page=228
39. Owston, R., York, D. & Murtha, S. (2013). Student perceptions and Achievement in a university blended learning strategic initiative. Internet and Higher EducationXXX(2013)
40. Panigrahi, R., Srivastava, P. R. & Sharma, D. (2018). Online learning: Adoption, continuance and learning outcome a review of literature. International journal of information Management. 43,114.

41. Permatasari, R. (2016). What do the studies say about the factors obstructing EFL/ESL students' participation? Paper presented at the 5th English Language Teaching, Literature, and Translation International Conference 2016. Faculty of Languages & Arts State University of Semarang.
42. Rahimi, S., Syuhada, I. Z., Wilantara, P., & Febrina, N. (2021). The Effect of Multimedia Presentation on the Explanation Text Writing Skills of Eighth Grade at AlBukhary
43. Rantauprapat Islamic Junior High School 2020-2021 Academic Year. Advances in Social
44. Rezaee, R., Haveshki, F., Barati-Boldaji, R., & Mehrabi, M. (2022). The effect of case-based e-learning on Academic performance and problem-solving ability in nursing students: A pre-and post-test study. Journal of Education and Health Promotion, 11(1), 302.
45. Rost, M. (2019). Online distance learning: Thematic study on the challenges faced by Educare College Inc.primary pupils47
46. Sams, A., & Bergmann, J. (2012). Flip your classroom: Reach every student in every class every day. International Society for Technology in Education (ISTE).
47. Science, Education and Humanities Research, volume 536 Proceedings of the First International Conference on Science, Technology, Engineering Industrial Revolution (ICSTEIR 2020). Pp313,-317.
48. Sebullen, M. T. (2023). Feeling The Flip: Investigating Senior High School Students' Satisfaction with Blended Learning. Iconic Research and Engineering Journals.
49. Singh, V. & Thurman, A. (2019). How many ways can we define online learning? A systematic literature review of definitions of online learning (19882018). American Journal of Distance Education, 33 (4), 289-306.
50. Springer, C., Bączek, M., ZagańczykBączek, M., Szpringer, M., Jaroszyński, A, & Sweller, J., VanMerriënboer, J. J. G. & Paas, F. (2019).Cognitive architecture and instructional design: 20 years later. Educational psychology review. 31 (2), 261–292.Z.
51. Tang L., Li S., Auden E., Dhuey E. (2020). Who benefits from regular class participation? The Journal of Economic Education, 51 (3–4), 243-256 https://doi.org/10.1080/00220485.2020.1804502 Unpublished PhD Thesis, Lagos State University, Ojo, Nigeria.
52. WożakowskaKbpłon, B. (2021). The social support and its Relationship to the anxiety of senior high school students psychology and education: A Multidisciplinary Journal, 1 (3), 331335. https://doi.org/10.5281/zenodo.6654353
53. Xu Y., Qiu X. (2022). Necessary but problematic: Chinese university English teachers' perceptions and practices of assessing class participation. Teaching in Higher Education, 27,841–858.https://doi.org/10.1080/13562517.2020.1747424