



PROCEEDINGS

The 6th National and International
Research Conference 2023: NIRC VI 2023

“The King’s Philosophy for
Innovation and Creative Economy towards
Sustainable Development Goals in
the New Normal Era: Opportunities and Challenges”

15 February 2023

Buriram Rajabhat University



TABLE OF CONTENTS

	Page
Featured Speaker	
A Word to the Wise: Managing Your Mental Health as an Adult Student in the New Normal David D. Perrodin	2
Role of Language in Attaining Sustainable Development Goals Dr. Irom Gambhir Singh	3
Integrating Global Issues in the Creative English Language Classroom Professor Ni Ni Hlaing	4
Creating a Professional Development School Partnership to Assist English Language Learners in Thailand Michael Smith	5
Role of Environmental Awareness and Perception in Local Sustainable Development Professor Dr. Saw Pyone Naing and Khin Ohnmar Htwe	6
A Comparative Study of Physicochemical Properties, Some Bioactivities of <i>Syzygium aromaticum</i> L. (Clove Buds) and Chemical Composition of Clove Buds Oil from Kyunsu (Tinintharyi Region, Myanmar) and India Ni Ni Oo	7
How do we utilize big data mining in Biological Science? Ömür BAYSAL	8
EFL Teachers' Hegemony in Classroom Assessments: Conflict between Context and Curriculum in Bangladesh Sree Bidhan Chakraborty Dr. Himadri Sekhar Roy	9
Post-Covid Challenges and Solutions of Web-Based Education on the Learners' Experiences: A Cognitive Psychological Approach Prof. Tariq Elyas, King Abdulaziz University, The Kingdom of Saudi Arabia	10
Oral Presentation Session	
Efficiency of Using Understanding by Design Lesson Planning Model for Teaching English to Grade Four Students in Beungxang Secondary School, Savannakhet Province, Laos Lakaisone Saiyachit, Thepphaitoun Phasawath, Viengxay Khanthaphat, Thippachanh Xayyalinh, Oymany keothavong	12
The development of Learning Achievement of Grade 10 Students on Poem Writing to Promote Higher-Order Thinking by Using Activities of Yuva Kavi Buriram Phitthayakhom Maneerat Rakphuan	24



TABLE OF CONTENTS (Cont.)

	Page
A Study of Mathematics Achievement Through Learning Management Using the Flipped Classroom Method of The First Year in Zhoukou Vocational and Technical College, Henan Province, China Zhang Haiwei, Suwana Juithong, Wassaporn Jirojphan	35
Developing an English Reading Practice Handbook in ASEAN Context for Teachers in the Responsible Area of Dhonburi Rajabhat University in Bangkok Kris Phattaraphakin, Utumporn Bunchuen, Uswin Chaiwiwat, Somjintana Jirayukul, Nitipatara Balsiri, Waraporn Puriwarangkoon	47
Developing an English Grammar Review Handbook to Enhance Writing Skill for Teachers in the Responsible Area of Dhonburi Rajabhat University in Bangkok Utumporn Bunchuen, Kris Phattaraphakin, Nithipattara Balsiri, Somjintana Jirayukul, Waraporn Puriwarangkoon, Usawin Chaiwiwat	56
Using Teaching Proficiency through Reading and Storytelling to Improve English Speaking Ability of Prathomsuksa 5 Students Thitikamol Uppawong, Napasup Lerdpreedakorn	65
The Study of Mathematics Problem Solving Ability of Grade 5 Students in Primary Schools through Learning Management by using 5E Teaching Model Zhang yan, Suwana Juithong, Satsayamon Sangway	81
Organization of Agricultural Learning Activities of Schools under the Chiang Mai Primary Educational Service Area Office Anchalee Chitman, Rut Sirisunyaluk, Juthathip Chalermphol, and Sukit Kanjina	92
English Language Learning Approaches as Impacted by Culture in Myanmar University Learning Environment Aung Thet Soe	105
The Culturally Responsive Teacher Preparedness of University English Teachers in Myanmar Aung Thet Soe	140
Prose Fiction Analysis and Literary Appreciation of English Specialization Students in Myanmar Mary, Akkarapon Nuemaihom, Kampeeraphab Intanoo	154
High School Students' Attitudes toward Chemistry Mya Thet Mon	169
The Assessment Literacy of English Teachers Working at the Universities in Myanmar Aye Aye Mar, May Sandi, Shoon Lae, Chu Sandi Yan Naing	185



TABLE OF CONTENTS (Cont.)

	Page
Introducing Eco-composition into EFL Writing Classroom Htun Win	198
Perceptions of University Teachers on Personal Skills of Teacher Leaders Zarni Mar	209
Collaborative Writing Project in the Literature Classroom of English Specialization Undergraduate Students Win Kyi Kyi Naing, Aye Aye Mar	221
Pedagogical Stylistics as a Tool Found in the Prescribed Poetry Texts of EFL Undergraduate Course in Myanmar Win Kyi Kyi Naing, Aye Aye Mar	229
Language Testing and Assessment: A Case Study in Myanmar Seng Nue Mai	239
Influence of Professional Development on Teachers' Performance and Career Progression Kyaw Sein	249
Guide me please! EFL Student Teachers' Perceptions of their Teaching Practice from a Yemeni University Morshed Salim Al-Jaro	265
Students' Perceptions toward Writing Class: Employing Writing Process Approach in Their English Essay Writing Sittisak Pongpuehee, Nawamin Prachanant, Saowarot Ruangpaisan	276
Using Communicative Language Teaching and Semantic Mapping to Improve English Vocabulary Learning Ability of Prathomsuksa 6 Students Jetnipat Yangklang, Worawoot Tutwisoot	287
The Research of Photogrammetry to Generate a Virtual Twin Art Exhibition of King Bhumibol Statues Gomesh Karnchanapayap, Piyanon Somboon	298
Factors Affecting Farmer's Satisfaction via Agricultural Extension of the Longan Collaborative Farming Project in Lamphun Province, Thailand Weerapong Paleea, Ruth Sirisunyaluckb, Juthathip Chalermphol, Budsara Limnirunkul	315
Spatial analysis of Dengue infection using Geographic Information systems in Dili, Timor Leste Zito Viegas da Cruz, Afonso Lima Araujo, Alexis Ribas, Choosak Nithikathkul Weerapong Paleea, Ruth Sirisunyaluckb,	327
An Analysis of Speech Acts by Joe in Soul Animation Movie Nattapat Promrpu, Nawamin Prachanant, Akkarapon Nuemaihom	350
The Obstacles and Difficulties of Myanmar Researchers in Academic Publishing Wint Khin, Sandar Chit	360



TABLE OF CONTENTS (Cont.)

	Page
The development of English Facebook fan page to promote Buriram sustainable products in Khao Moa community Namfon Krutkaew, Phenphitcha Phengtam, Watcharaphon Kaewpan, Wanitchakorn Kongkaew, Jansuda Boontree	375
Agrotourism in Chiang Mai Northern Thailand: Current Practices Opportunities, and Limitations Panas Khumnun, Juthathip Chalermphol, Budsara Limnirunkul, Ruth Sirisunyaluck	384
A Case Study Measuring Entrepreneurship Programming on Incubator Leadership, Mentorship and their Impact on the Success Rate of Incubator Clients Giovanni (John) Filice	394
A Creative Work: Program music on “Kreta-Kran” Song for Pop Orchestra: First Time Thitinun Charoensloong, Kanyapat Pattanasab, Wirat Leangsomboon	417
The Role of Solar Energy in Agriculture for Young Smart Farmers in the Upper Northern Region of Thailand Anupong Khobkhet, Budsara Limnirunkul, Ruth Sirisunyaluck, Juthathip Chalermphol	428
Development of Roof Insulation from Bamboo Charcoal and Natural Kaolin Clay Touchpong Janlee, Nawadee Srisiriwat	439
Development of Flame Retardant Insulation from Natural Materials Touchpong Junlee, Nawadee Srisiriwat	451
Rajabhat Dataset: a dataset of skills identification Chai Meenorngwar, Choosak Nithikathkul	462
Optimization Cutting Tool Cost Down Banpot Meesa, Jakaphan Pinthong, Nattapat Kanchanaruanrong Weerapol Taptimdee, Sanphasit Chonlaphan	474
Study of Thread Screw Pitch range on Stress of Lumbar Spine Sanphasit Chonlaphan, Apiwat Wongnarat, Weerapol Taptimdee, Nattapat Kanchanaruanrong, Banpot Meesa	482
Increase Efficiency Cutting PIPE Process Banpot Meesa, Jakaphan Pinthong, Nattapat Kanchanaruanrong ¹ Weerapol Taptimdee, Sanphasit Chonlaphan	492
Feasibility Study of Investment in Rice Seed Dryers to Efficiency Enhancement of Commercial Rice Seed Production by the Community Rice Center: A case study Suparat Potibunlung, Suraphol Sreshthaputra, Ruth Sirisunyaluck, Juthathip Chalermphol	504



TABLE OF CONTENTS (Cont.)

	Page
Efficiency Measurement Factors of Carbon Footprint in Warehouse Activities Chutidet Mankongtham, Chanicha Moryade	516
A novel drug candidate from Phomopsis acheri to inhibit HIV-1 reverse transcriptase RNase H activity using data mining process Ragıp Soner SILME, Naeem Abdul GHAFOR, Ömür BAYSAL	525
Armature-coils heat cooling of railway traction motor by using the Low-speed rotating heat pipe. Settha Klangchat, Bundit Krittacom	526
Poster Presentation Session	
The Development of Mathematics Learning Activity Set Emphasizing Problem- Solving Competencies based on Polya's Concepts with the Bar Model Jittapon Rattanachayaban, Chaowarit Phanthong, Noppadol Thumchuea	536
Anxiety in English Oral Presentations of Thai EFL Students Khomsin Sarntong, Chayakorn Sutakote, Sirilak Sriphachan, Yatawee Chaiyamat	544
Dental biofilm cariogenicity changes under the effect of stainless steel versus elastomeric ligatures in fixed orthodontic patients Thanakorn Saengphen, Sittichai Koontongkaew, Kusumawadee Utispan	552
Abstract	
Quality of Life of Students in Health Professions in the Situation of Corona Virus 2019 Pandemic, Thailand: A Case Study of Public Health Students, Faculty of Science, Buriram Rajabhat University, Thailand Chawiwat Yord-in, Choosak Nithikathkul	566
Impact of Periodontal Intervention on Local Inflammation and Periodontitis: Phenomenon and Integrative Treatment Jarupat Jundaeng, Choosak Nithikathkul	567
The Study Factor and Exercise Behavior of Buriram Rajabhat University Students Kittisak Namvichah, Choosak Nithikathkul	568



A Study of Mathematics Achievement Through Learning Management Using the Flipped Classroom Method of The First Year in Zhoukou Vocational and Technical College, Henan Province, China

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Abstract

The purposes of this research were to: 1) compare the mathematics achievement of the first year students before and after learning through the flipped classroom method, and 2) compare the mathematics achievement of first year students after being exposed to the flipped classroom method with a set criterion of 70 percent of the full marks, and 3) assess the student's satisfaction toward on the flipped classroom method. The samples used in this study were 30 first year students at Zhoukou Vocational and Technical College, Zhoukou city, Henan province, China. They were selected by cluster random sampling. The research instruments were as follows: 1) Five lesson plans using the flipped classroom method on the topics of basic properties of inequalities, Inequality is represented by an interval, linear inequality with one unknown, one-variable quadratic inequality, Inequality involving absolute values. 2) An achievements test was used with a reliability of 0.73. 3) The reliability of student satisfaction is 0.76. The statistics used for data analysis were the mean, standard deviation, and one-sample t-test of a sample.

The results of the study were as follows:

1) The mathematics achievement of the first-year students after being exposed to the flipped classroom method was higher than before at a statistically significant level of 0.05.

2) The mathematics achievement of the first-year students after being exposed to the flipped classroom method was higher than the 70% criterion at the 0.05 statistical significance level ($\bar{X}= 22.00$ S.D. =1.46).

3) The satisfaction of the first-year students after being exposed to the flipped classroom method was at a higher level ($\bar{X}=4.18$ S.D.=0.72) .

Keywords: Flipped Classroom, Mathematics Achievement, Students' Satisfaction

1. Introduction

In 2010, in Chapter 19 of the Outline of the National Program for Long - and Medium-Term Educational Reform and Development (2010 - 2020), it was clearly proposed to accelerate the process of educational informatization, including strengthening the development and application of high quality educational resources and strengthening the application of information technology (China



2010-2020) and to promote the application of information technology in the field of education and strengthen the integration of information technology and curriculum, this not only provides a new means of education, but also has a profound impact on the concept, method and content of education and teaching, which has become an important strategy to promote the reform and development of education.

With the rapid development of science and technology, people's pursuit of quality of life in modern society is getting higher and higher, which puts forward the requirements for training talents. What we need is a kind of innovative talent, and this kind of creativity is not only refers to the invention or discovery of something, but also to enabling people to adapt to this rapid development and competition of the era. According to the research of social psychology, the key of people's ability to adapt to the society and make achievements lies in their ability to raise problems, analyze problems and solve problems creatively. But the ultimate goal of discipline education is to improve students' ability to survive in modern society and give more returns to society. Therefore, the reform of basic quality education has become the general trend.

1.1. Ignoring the reform of mathematics quality education

The reform of mathematics quality education, With the rapid development of science and technology, people's pursuit of quality of life in modern society is getting higher and higher, which puts forward the requirements for training talents. What we need is a kind of innovative talent, and this kind of creativity is not only refers to the invention or discovery of something, but also to enabling people to adapt to this rapid development and competition of the era. According to the research of social psychology, the key of people's ability to adapt to the society and make achievements lies in their ability to raise problems, analyze problems and solve problems creatively. But the ultimate goal of discipline education is to improve students' ability to survive in modern society and give more returns to society. Therefore, the reform of basic quality education has become the general trend. At present, the basic reform of mathematics basic education in China has the following aspects: First, quality education concept is more important to the ability of innovation. Second, mathematics teaching content should be based on comprehensive learning, pay more attention to the effective connection and integration between disciplines, use modern technology to design teaching, and teach the content suitable for students and social development. Third, in terms of mathematical learning methods, both inquiry learning and other learning methods should be based on what students have learned (Li Xiaogang et al. 2013).

1.2. Integration of mathematics curriculum and information technology

Integration of mathematics curriculum and information technology. Nowadays, information technology has obviously become a powerful driving force for the construction of discipline learning. Any reform in the field of education, including teaching reform and curriculum reform, can never ignore it internally. At present, the reasonable infiltration of subject teaching and contemporary information technology has been the problem of course reform. The latest promulgation of the Outline of Basic Education (Tian Aili, 2014) , means that



the reform of educational curriculum and the informatization of primary and secondary education is combined, and at the same time, the way forward is determined for the integration of mathematics curriculum and information technology. According to the new curriculum standards under the development of curriculum resources, modern information technology is emphasized in the teaching process. The combination of modern technology and basic mathematics courses become a strong help for students to learn mathematics, liberate students from complex operations, so that students can spend more time to participate in more realistic learning life, so that students' practical ability to exercise.

1.3. The arrival of the flipped classroom in the new century

The flipped classroom has become a buzzword in education in recent years, but the notion of "flipped classroom" (Baker 2000a, b) was discussed in the literature as early as the year of 2000. The flipped classroom instructional strategy is not new, but it has gained prominence recently due to the increasing access to digital technologies, resources, and broadband Internet connectivity (Sun et al. 2018; Zhai et al. 2017). In 2007, in order to help absent students, make up their lessons, two chemistry teachers of a school in the United States recorded teaching videos and posted them on the Internet for students who did not attend the class to learn, and got a good response (Liu Wei&Chen Bingbing, 2016) . After a period of time, the two teachers began to boldly let all the students watch the teaching video before class, and concentrated on solving the problems existing in the class. This teaching mode was widely welcomed by the students. This teaching mode changes the traditional teaching mode. The new knowledge explained by teachers in class is replaced by students watching teaching videos at home under the supervision of parents, and the deepening application of knowledge is turned into the solution of teachers' perplexities in class. "Traditional classroom" in the basic acceptance of new knowledge from the teachers in class means that students practice after class internalization and absorption, and the teacher in the classroom "flipped" through information technology means that micro videos carefully prepared before class. Students in the class, after learning the new knowledge in the classroom, will have more autonomy as teachers and students answer questions to complete individualized counseling. On this basis, teachers carry out more in-depth teaching activities. This kind of teaching reform practice can allow students to design individual learning programs according to their own learning habits, and improve the efficiency of self-learning and the utilization rate of time.

2. Research objectives

This research consisted of three objectives:

- 2.1 To compare the mathematics achievement of first year students before and after being exposed to the flipped classroom method.
- 2.2 To compare the mathematics achievement of first year students with the determined criteria with a set criterion of 70 percent of the full marks.
- 2.3 To assess first year students' satisfaction toward the flipped classroom method.



3. Research hypotheses

3.1 The mathematics achievement of first year students after being exposed to the flipped classroom method is higher than before.

3.2 The mathematics achievement of first year students after being exposed to the flipped classroom method is higher than 70%.

4. Research Methodology

4.1 Samples

4.1.1 The population in this study was 150 students (from five classes) at the first-year college stage at Zhoukou Vocational and Technical College in the academic year 2022, Zhoukou city, Henan province, China.

4.1.2 The samples for this study were 30 first year students (from one class) at Zhoukou Vocational and Technical College in the academic year 2022, which were selected by a cluster random sampling method.

4.2 Research instruments

Instruments for measuring mathematics achievement

1) Instructional innovation for the flipped classroom comprised of five steps. The first step was to combine the learning guide plan and micro-class video, carry out pre-class learning, and complete the autonomous task list. In terms of teacher activities, through the analysis of the course content, the teacher understood the main learning content of this lesson, and made the micro-video and learning guide plan of this lesson. In terms of student activities, students watched videos in groups, discussed and summarized problems, and searched for materials to solve the problems.

The second step was to discuss the problems in each part of the class. In terms of teacher activities, they summarized students' difficulties and shortcomings through observation. In terms of student activities, through group analysis and discussion, all groups shared their opinions about the course.

The third step involved the students' asking questions in class. According to different levels, teachers carry out teaching. In terms of teacher activities, in class, teachers guided students to solve individual problems or consolidate the knowledge needed to be consolidated, and then expanded and supplemented according to the actual situation of the class. In terms of student activities, they discussed the problems together while watching the video. If the problem could not be solved in a group, the whole class was free to discuss it.

The fourth step was to teach each student according to their aptitude. In terms of teacher activities, they guided students with different learning levels to solve problems or consolidate knowledge. In terms of student activities, they consolidated knowledge through exercises.

The fifth step involved reflecting and summarizing. In terms of teacher activities, they performed individual evaluation and group evaluation. In terms of student activities, they evaluated each other

2) A total of five lessons and 10 hours of math instruction were assigned and with the highest level of suitability.

Instrument for measuring mathematics achievement



1) The math test had a total of 30 items, and the Index of Item Objective Congruence (IOC) of each item in the evaluation form was 0.8 higher than 0.76. The result of analyzing the IOC index showed that all test items were appropriate and could be used in the test difficulty (p) between 0.2-0.8 and discriminability (r) > 0.2 and an achievements test with a reliability of 0.73.

4.3 Data collection

The procedures of data collection were as follows:

- 1) The samples were given the pretest for measuring Mathematics Achievement with a constructed instrument.
- 2) The samples were taught by the flipped classroom method.
- 3) After finishing the instruction, the samples completed the post-test by using the same instrument, which was used in the pretest.

4.4 Data analysis

In this study, data were analyzed by using the statistical program according to the research objectives. Mathematics achievement was compared before and after the students were exposed to the flipped classroom method by using t-test for dependent sample.

5. Research Results

The results were presented according to the research objectives as follows:

5.1 Section 1 The results of comparing the mathematics achievement of the students before and after being exposed to the flipped classroom by using t-test for dependent sample are shown below.

Table 1 The results of comparing the different scores of mathematics achievement before and after being exposed to the flipped classroom method

Paired samples test

Group	N	Pretest scores		Post-test scores		t	p
		\bar{X}	S.D.	\bar{X}	S.D.		
Experimental group	30	15	1.60	22.00	1.46	29.20	.00

$P < 0.05$

Based on the results, we can conclude as follows:

As shown in Table 1, the students had mathematics achievement after being exposed to the flipped classroom method (post-test) greater than before (pre-test) at a .05 statistically significant level ($t = 29.20, p < 0.05$).

On average, Posttest scores were 7 points higher than Pretest scores (95%).

Thus, it can be concluded that, mathematics achievement of the first students after being exposed to the flipped classroom method was higher than before.



5.2 Section 2 The results of comparing mathematics achievement of students with the determined criterion set at 70 % by using t-test for one sample were as follows.

*Table 2
The result of comparing the different scores of mathematics achievement after being exposed to the flipped classroom method with the criterion set at 70 percent*

Group	N	Full score	Criteria score	\bar{X}	S.D.	t	p
Experimental group	30	30	21	22.00	1.46	3.75	0.0005

$P < 0.05$

Based on the results, we can conclude as follows:

As shown in Table 2, the average score for the mathematics achievement of the first-year students after being exposed to the flipped classroom method was 22.00 from a full score of 30 and the standard deviation was 1.46, which was statistically higher than the criterion of 70% at the .05 level of statistical significance.

Thus, it can be concluded that, the mathematics achievement of the first-year students who were exposed to the flipped classroom method was higher than 70%.

5.3 Section 3 The results of the students' satisfaction toward the flipped classroom method were as follows.

*Table 3
The results of students' satisfaction with the lesson plans after being exposed to the flipped classroom method*

NO.	ITEM	\bar{X}	S.D.	Level of appropriateness
1	Learning aspect	4.10	0.7	High
	1.1 Interactions in the classroom include changes in communication between classmates or teachers and students	3.97	0.81	High
	1.2 Flipped classroom self-study link, you can take the initiative to complete the tasks assigned by the teacher	4.13	0.68	High
	1.3 In the flipped classroom teaching, you can participate in the group discussions	4.20	0.61	High
2	Instructional strategy	4.16	0.69	High



	2.1 You completed the pre-class study task list on time	4.17	0.70	High
	2.2 You interact and communicate in class to enhance your ability of independent exploration and learning	4.00	0.59	High
	2.2 You interact and communicate in class to enhance your ability of independent exploration and learning	4.00	0.59	High
	2.3 You work with groups to learn in class to arouse enthusiasm and participation	4.30	0.65	High
	2.4 Teachers give personalized guidance to students	4.13	0.78	High
	2.5 Teachers' collective guidance strategy for existing problems	4.20	0.71	High
3	Teaching media aspect	4.22	0.73	High
	3.1 Compared with the traditional classroom, I like the flipped classroom teaching method	4.20	0.66	High
	3.2 You believe that you have mastered the content of the course activities provided to you by the teacher.	4.27	0.76	High
	3.3 With flipped classroom teaching, you can actively answer the teacher's questions	4.27	0.78	High
4	Assessment aspect	4.23	0.75	High
	4.1 The degree to which you think you have completed the learning task of the pre-class video	4.27	0.74	High
	4.2 In the flipped class, you can feel a deeper understanding of the knowledge points through the teacher's solution of the pre-class problems, the systematic teaching of the knowledge, and the discussion of the problems between the students	4.33	0.76	High
	4.3 You think using flipped classroom teaching will improve your grades	4.23	0.73	High
	4.4 You feel that flipped classroom teaching will deepen your understanding of what you are learning	4.10	0.76	High
	Overall Total	4.18	0.72	High

Explanation of mean score of student satisfaction:

- 1) 4.51-5.00 refers to very high level;
- 2) 3.51-4.50 refers to high level;
- 3) 2.51-3.50 refers to moderate level;
- 4) 1.51-2.50 refers to low level;



5) 1.00-1.50 refers to very Low level.

Based on the results, we can conclude as follows:

As shown in Table 3, the overall results of the flipped classroom method by experts are at very high level with ($\bar{X}=4.18$, S.D. = 0.72), and the results with each aspects were shown as follows:

Learning aspect by the total 1 results were at high level with ($\bar{X}= 4.10$, S.D. = 0.7), and each item were followed this: Interactions in the classroom include changes in communication between classmates or teachers and students at very high level ($\bar{X}=3.97$ S.D.=0.80), Flipped classroom self-study link, you can take the initiative to complete the tasks assigned by the teacher were at very high level with ($\bar{X}=4.13$ S.D.=0.68) and In the flipped classroom teaching, you can participate in the group discussions were at very high level with ($\bar{X}=4.20$ S.D.=0.61).

Instructional strategy by the results were at high level with ($\bar{X}= 4.16$, S.D. = 0.69), and each item were followed this: You completed the pre-class study task list on time at very high level ($\bar{X}=4.17$ S.D.=0.70), You interact and communicate in class to enhance your ability of independent exploration and learning were at very high level with ($\bar{X}=4.00$ S.D.=0.59), You work with groups to learn in class to arouse enthusiasm and participation were at very high level with ($\bar{X}=4.30$ S.D.=0.65), Teachers give personalized guidance to students were at very high level with ($\bar{X}=4.13$ S.D.=0.78) and Teachers' collective guidance strategy for existing problems were at very high level with ($\bar{X}=4.20$ S.D.=0.71).

Teaching media aspect by the results were high level with ($\bar{X}= 4.22$, S.D. = 0.73), and each item were followed this: Compared with the traditional classroom, I like the flipped classroom teaching method at very high level ($\bar{X}=4.20$ S.D.=0.66), You believe that you have mastered the content of the course activities provided to you by the teacher were at very high level with ($\bar{X}=4.20$ S.D.=0.76), and With flipped classroom teaching, you can actively answer the teacher's questions were at very high level with ($\bar{X}=4.27$ S.D.=0.78).

Assessment aspect by the results were at high level with ($\bar{X}= 4.23$, S.D. = 0.75), and each item were followed this: The degree to which you think you have completed the learning task of the pre-class video at very high level ($\bar{X}=4.27$ S.D.=0.74), In the flipped class, you can feel a deeper understanding of the knowledge points through the teacher's solution of the pre-class problems, the systematic teaching of the knowledge, and the discussion of the problems between the students were at very high level with ($\bar{X}=4.33$ S.D.=0.76), You think using flipped classroom teaching will improve your grades were at very high level with ($\bar{X}=4.23$ S.D.=0.73), and You feel that flipped classroom teaching will deepen your understanding of what you are learning were at very high level with ($\bar{X}=4.10$ S.D.=0.76).

Thus, it was concluded that, the students' satisfaction after being exposed to the flipped classroom method was high.



6. Discussion

The following points based on the research results were discussed:

6.1 The flipped classroom teaching method enables students to control their own learning progress, so that the learning needs of students at different levels can be satisfied, and the desire of hierarchical teaching can be realized. For example, students with good self-learning ability can quickly learn the knowledge points, so that they can save time to think about questions and other interesting knowledge, while students with weak self-learning ability can learn the video repeatedly until they master the knowledge according to their own degree. The biggest feature of flipped classroom is that it reclassifies the time in and out of the physical classroom, overturning the passive way of students receiving knowledge in the traditional classroom. Students learn new knowledge preliminarily through teaching micro-videos before class, while in class, they mainly complete the internalization of knowledge required by class standards (Schmidt, S.M.2016).

6.2 During the implementation of "flipped classroom", an important factor that cannot be ignored is whether students develop the habit of self-study. Flipped classroom allows limited class time to be allocated more rationally. As students learn relevant knowledge before class, teachers can spend more time in class to solve students' problems. In comparison, flipped classroom can more effectively visualize complex problems, make teachers more targeted in class content, and spend more time on students' weak points, thus making the distribution of classroom practice more reasonable (Liu Wei 2016).

6.3 Timely feedback of "pre-class learning task list" provides basis for classroom teaching. The "pre-class learning task sheet" is timely feedback to the students' self-study process. Therefore, teachers should attach great importance to it. No matter the feedback on the network platform or the problem communication in class, teachers need to summarize the "flipped classroom" because the difficult problems found in the "flipped classroom" will become the resources for teachers to interact in the classroom. Teachers design these questions as topics for group discussion and guide students to explore the answers to the questions through independent discussion and group work. Classroom interaction always focuses on solving key problems and improving the pertinence of classroom interaction. (Liu Jinfeng, 2018).

6.4 The implementation of flipped classroom in the classroom is the internalization of knowledge and the key to effectively improve students' learning efficiency. In this link, inter-group cooperation and teachers' question-answering are complementary. The teacher shows the remaining problems of each group to the students by PPT and leaves some discussion time for the students. Each group is invited to try to solve the problems of other groups. In-depth discussion with students, in the elaboration of the explanation at the same time with the corresponding exercises to consolidate, helps students to understand and remember. According to the completion of the learning plan, the teacher carefully sets up a series of questions, which are analyzed and discussed by teachers and students, and summed up the knowledge content of this class and the mathematics thought method involved (Liu Xiangyong.2016).



6.5 The samples' satisfaction with the flipped classroom was also found at the highest level (4.81). By independently watching teaching videos before class and completing the task list assigned by the teacher, the students had a sense of achievement in making breakthroughs step by step, which greatly improved the efficiency of pre-class preview and learning. In addition, the class atmosphere was very good, so that the students could learn a lot of knowledge happily and communicate with the group constantly. This makes students more interested in learning mathematics (Deng Xin 2013).

7. Conclusion

7.1 Mathematics achievement of the first-year students after being exposed to the flipped classroom method was higher than before at a statistically significant level of 0.05.

Group	N	Pretest scores		Posttest scores		t	p
		\bar{X}	S.D.	\bar{X}	S.D.		
Experimental group	30	15	1.60	22.00	1.46	29.20*	.000

$p < 0.05$

7.2 The mathematics achievement of the first-year students after being exposed to the flipped classroom method was higher than the criterion of 70% at the 0.05 statistical significance level ($\bar{X} = 22.00$ S.D. = 1.46).

Group	N	Full score	Criteria score	\bar{X}	S.D.	t	p
Experimental group	30	30	21	22.00	1.46	3.75*	0.000

$p < 0.05$

7.3 The satisfaction of students to the flipped classroom method was at a high level ($\bar{X} = 4.18$ S.D. = 0.72).

8. Recommendations

The following are some recommendations based on the research results:

8.1. Recommendation for implications

1) Teachers need to strengthen the knowledge of the flipped classroom method, strengthen theoretical learning, improve teaching ability, and earnestly complete the course preparation to make themselves have confidence during teaching.

2) In teaching, the flipped classroom method takes students as the main body and teachers as the lead to complete the teaching organization. Although the teacher is the guide, the teacher cannot leave the students alone, because the teacher guides the students to learn actively, so the students become the subject of learning.



3) In the practice of the flipped classroom method, teachers should guide students to actively learn the content of this lesson, and always keep supervision and guidance, so that students will not deviate from the topic during the learning process.

4) Flipped classroom method can effectively improve students' academic performance in the actual classroom teaching process. Therefore, if conditions permit, the flipped classroom method should be prioritized in the classroom.

8.2. Recommendation for further research

1) The practice time of flipped classroom method is relatively short and the number of lectures is limited. In order to better test the influence of flipped classroom on the cultivation of students, teachers also need to use the flipped classroom method to conduct more effective empirical research in the classroom for a long period of time.

2) This research is limited by our academic level and external resources, so there are still some deficiencies in the exploration of flipped classroom method, which needs further exploration and attempts in the later stage.

3) One school cannot represent all ordinary colleges and universities, so the flipped classroom method still needs to be verified in more ordinary colleges and universities so as to make the experimental results more convincing.

4) This study will continue to reflect on and improve the shortcomings of this practice in future flipped classroom teaching activities. In our opinion, with the continuous popularization of information technology and in-depth research, the value of flipped classroom will be more perfectly reflected in the future teaching.

Due to my limited time in practice and lack of experience in the initial stage of exploration, the research on the teaching model proposed based on the concept of flipped classroom is just the beginning. I will continue to make efforts on the implementation of flipped classroom in the future teaching, further improve the flipped classroom model, and provide reference for other teachers. Although flipped classroom is a new teaching model put forward in recent years, but still cannot be widely used. I hope the majority of educators can further explore and study flipped classroom model, change the traditional concept, conform to the trend of teaching reform, promote the development of our country. In a word, the researcher will continue to reflect on and improve the shortcomings of this practice in future flipped teaching activities. And the researcher believes that with the continuous popularization of information technology and the deepening of research, the value of flipped classroom will be more perfectly reflected in future teaching.

References

- Baker, J. W. (2000a). *The "flipped classroom": Using web course management tools to become the guide by the side*. Paper presented at the 11th international conference on College Teaching and Learning, Jacksonville, FL. Deng Xin. Science Evaluation Students' Attention to Growth [J]. Reading and Writing (Late Last year), 2013 (4).



- Jinfeng, L. (2018). *Research on the Effective Teaching of Mathematics in Primary Schools under the New Curriculum*. Jiangxi Education: Management Edition (A)(1).
- Li Xiaogang, Wang Yunwu, Ma Dejun, Jin Suli. *Research on micro-course design and teaching application from the perspective of micro-learning [J]*. Modern Educational Technology, 2013(1):31-35.
- Liu Wei, Chen Bingbing. *Review of flipped classroom research in China [J]*. Education Circle, 2016(3):101-102.
- Liu Xiangyong. *Practical Operation Guide of Flipped Classroom [M]*. Changchun: Northeast Normal University, 2016:17.
- Schmidt, S.M., & Ralph, D.L. (2016). *The flipped classroom: A twist on teaching*. Contemporary Issues in Education Research (CIER), 9(1), 1–6.
- Sun, Z., Xie, K., & Anderman, L. (2018). *The role of self-regulated learning in students' success in flipped undergraduate math courses*. The Internet and Higher Education, 36, 41–53
- Tian Aili. *Research on MOOC and Flipped Classroom in the Field of Basic Education in the United States, Canada, New Zealand and Australia [J]*. Innovative Talent Education, 2014(3):75-80.
- Zhai, X, Gu, J., Liu, H., Liang, J. C., & Tsai, C. C. (2017). *An experiential learning perspective on students' satisfaction model in a Flipped Classroom context*. Journal of Educational Technology & Society, 20(1), 198–210.