

COLLEGE TEACHERS' PEDAGOGICAL PREFERENCE FOR FACILITATING MATHEMATICS COURSES

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ABSTRACT

This study surveyed college teachers' pedagogical preferences in facilitating mathematics courses for first-year college students. Using the purposive sampling technique, nine learning facilitators were chosen. Data were gathered through online interview and analyzed using descriptive statistics. Results showed that the demonstration, activity, discussion, lecture, deductive, and problem methods are the preferred strategies utilized to facilitate mathematical concepts and principles. Generally, these strategies are a combination of traditional and contemporary teaching methods in response to the actual situation on the ground and the needs of the learners.

Key Words: Teaching Strategies, Mathematics, College Teachers.

1. INTRODUCTION

Preference for strategies to facilitate instruction is critical in ensuring learning success. College teachers across disciplines enjoy academic freedom. It means that they have the autonomy to select their preferred teaching strategies. Arguably, teaching styles vary as much as learning styles. Matching teaching style to learning style is not a panacea that solves all classroom-related concerns. Nowadays, teachers teach more demanding mathematics to various audiences. Thus, all teachers must possess a range of perspectives to facilitate instruction best. It includes facilitating Mathematics skills and competencies. The American Psychological Association (1995) states that learning is most effective when students are treated as individuals with different learning strategies, approaches, and capabilities. Teachers across disciplines and subject areas then need to ensure that they are employing several classroom measures to make learning fun and, in turn, decrease problems associated with boredom, motivation, and understanding complex competencies.

Over the years, teaching strategies have been improved to deal with students' learning difficulties in all learning areas, including Mathematics. Time and again, choosing learners suited strategies play a critical in teaching mathematics subjects and courses to attain good performance in this learning area. This contributes to classroom interest and learning enthusiasm for the subject matter Ryan et al. (2014). However, in light of the implementation of the K-12 Curriculum in the Philippines educational system, there is a growing demand for primary education and college mathematics teachers to successfully teach mathematical concepts and skills for the learners to comprehend and remember and, at the same time, effectively teach this math content. These are all on top of being able to relate to the needs of the learners (Sherman, 2005). Additionally, Mabry (2005) argued that good teaching translates to successful student learning. Mathematics teachers then necessitate advanced knowledge of this discipline, pedagogical content, and curricula. Given these contestations, the present article intends to explore the preference of college teachers' in facilitating mathematics courses for college students.

2. REVIEW OF RELATED LITERATURE

Mathematics and learning mathematics helps learners become analytical and critical thinkers. Knowing math aids in developing lifelong learning skills necessary to solve real-life problems. Studies showed that students inclined toward social sciences usually dislike this subject (Prayoga & Abraham, 2017). Altintas & Ilgün (2017) believe this negative attitude is due to the learners' perception of its attached mathematical formula and rules. Arguably, many learners have difficulty learning this subject matter which compels them to try out available learning styles. Keefe (1979 in Ariola, 2012) defined learning style as the composite of cognitive, affective, and psychological characteristics that are relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment." Nzesei, M. M. (2015) argued that learning is dependent on the conditions under which students learn. In principle, it follows then that learning style also focuses on how learners learn. So, Sighn (2017) recommended that teachers set up conditions, one of which is to tailor their teaching strategies to the learners' needs, to help learners optimize learning given chosen learning styles.

Several studies have been conducted investigating mathematics teachers' teaching preferences in facilitating mathematics courses in college. Padmavathy and Mareesh (2013) averred that teachers have the responsibility to instill in their learners' minds the responsibility to learn and offer support along the way. This would mean providing them with deliberate instruction to ensure the successful performance of the learning tasks. Ryan et al. (2014) recommended for teachers the following strategies to show interest in student needs and show concerns about them. These include planning appropriate lessons and modifying teaching styles, providing tasks done cooperatively on skills, allowing participation among students and consciously encouraging volunteerism, and encouraging collaboration among students to make them aware of the importance of learning new skills from peers.

Meanwhile, Cardino and Ortega-Dela Cruz (2020) analyzed the influence of learning styles and teaching strategies on academic performance in mathematics of ninth graders. Statistically treated data revealed that student-respondents have a combination of dependent, collaborative and independent learning styles. Of these styles, the independent style significantly influences their academic performance. Meanwhile, regarding teaching strategies, cooperative learning, deductive approach, inductive approach, and integrative approach significantly influence their academic performance. Additionally, Senoc's (2007) study revealed that young Filipino learners still poorly perform in national assessments. This result is supported by the data from DepEd's National Educational Testing and Research Center (NETRC), which revealed that while students can comprehend mathematics' basic principles, "they have difficulty in applying such basic principles to prove and analyze data in geometry and comprehend basic conceptson algebra, geometry, and statistics.

To address this gap, Modern Mathematics was introduced as one of the courses to be taken up by college students across programs. The course's goals as stated in CHED Memorandum Order No. 20, s. 2013 includes: generating an appreciation of the quantitative tools that help to present and explain issues arising in the media and students' daily lives, heightening communication skills, both written and oral, of mathematical ideas so that students can express quantitative evidence in support of an argument or purpose of work, increasing the ability to explain information presented

in mathematical forms such as equations, graphs, diagrams, tables, and paragraphs and to convert relevant information between the forms, strengthening the ability to make judgments and draw appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis, and enhancing mathematical competence in performing appropriate calculations and communicating results in the specific areas of modeling, personal finance, basic statistics, and geometry.

3. METHODOLOGY

The online survey method was to gather data. According to Pinsonneault & Kraemer (1993); and Salant & Dillman (1994), this method is considered a means for gathering information relative to the characteristics, actions, or opinions of a large population enough to carry out assessment needs, evaluate demand, and examine impacts. Nine college teachers were purposively chosen as respondents. They are teaching in a state-run institution for higher learning. All are master's degree holders. Data were gathered using a survey questionnaire channeled through a messenger platform. Data were analyzed through frequency count.

4. RESULTS

Table 1 below presents the results of the analysis made for the gathered data. It can be gleaned from the table that college teachers prefer the demonstration, activity, discussion, lecture, deductive, and problem methods as strategies to facilitate mathematics courses in college for freshmen students.

Table 1 Strategy Utilized in Facilitating Mathematics Courses

Strategies in Teaching	Percentage	Rank	Description
Demonstration Method	55.55%	1.5	Often Used
Activity Method	55.55%	1.5	Often Used
Discussion Method	44.44%	3	Sometimes Used
Lecture Method	33.33%	4	Sometimes Used
Deductive Method	22.22%	5.5	Sometimes Used
Problem-Based Learning Method	22.22%	5.5	Sometimes Used

Evidently, the demonstration and activity methods are the most preferred teaching strategies among the participants. According to Khan (2018), demonstration as a method of teaching means giving a demonstration or performing an activity. Teachers usually facilitate instruction in a step-by-step approach to achieve the desired goal. It is considered a practical way of mastering concepts and skills. In the context of teaching math, learners are usually asked to demonstrate on the board how they are able to arrive at a correct answer using a particular solution. On the other hand, the activity method as explained by Babar (2011) is used to emphasize actions that promote the learners' interest rationally and physically. This method has three main

categories: exploratory, constructive, and expressional. It also follows six steps which include: analyzing needs for implementing an active learning strategy, identifying topics and questions, identifying learning objectives and outcomes, planning and designing activities, identifying the sequence of learning events, and evaluating and assessing.

The third preferred method is the discussion method. Hussain, Anwar, and Majoka (2011) claimed that discussion methods are a variety of forums for the open-ended, collaborative exchange of ideas between the teachers and learners with the end goal of developing the latter's higher-order thinking skills, including problem-solving, learning to learn, and comprehension. When used as a teaching strategy, the learning participants are expected to present varied perspectives on their views on certain ideas, debate the ideas of others, and reflect on the exchanges of ideas made.

The fourth commonly used teaching method is the lecture method. According to Hug, Krajcik, and Marx (2005) lecture method of teaching is a conventional method for facilitating instruction that is still commonly used by teachers today. It is generally described as a single channel of communication in which students simply listen to the teacher narrating the concepts. There are several advantages to using this method. These include being able to cover a vast amount of topics in the class, does not require using laboratory equipment, learning material is not required, aids in developing student listening skills, logical arrangement of the material in order to present it orally, and helps learners learn languages spoken during the conduct of lecture.

Also in same rank of preference are the deductive and problem-based learning methods. Amirali (2010) explained that a deductive approach to teaching mathematics by giving learners rules, examples, and practice. It is a teacher-centered approach to presenting mathematical concepts and competencies. This is compared with an inductive approach, which starts with examples and asks learners to find rules and hence is more learner-centered. Additionally, the deductive approach may be suitable for lower-level learners who need foundational knowledge in this discipline. Meanwhile, Golji and Dangpe (2016) said that a Problem-Based Learning (PBL) is a pedagogic approach in which complex real-world problems are used as catalysts in promoting students' learning of concepts and principles as opposed to the direct presentation of facts and concepts. PBL ensures the development of critical thinking skills, problem-solving abilities, and communication skills. As a method, it can be incorporated into any learning situation by incorporating real-world problems.

5. CONCLUSION

The present study proved that college teachers use various teaching methods to facilitate mathematics courses intended for freshmen students. This suggests that college teachers address learners' diversity which is a crucial component to ensure success in learning foundational mathematical concepts direly needed to appreciate and understand complex concepts. Similarly, it is evident in the findings that college teachers adhere to traditional and constructivist approaches to teaching mathematics. This is a testament that teachers consider the situation on the ground, especially the learning conditions and environment, as well as the needs of their immediate learners.

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