Humanities and Social Sciences Letters
2023 Vol. 11, No. 3, pp. 303-311
ISSN(e): 2312-4318
ISSN(p): 2312-5659
DOI: 10.18488/73.v11i3.3478

Determining factors of teachers' readiness to teach economics using a spiral progression approach

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Article History
Received: 8 February 2023
Revised: 23 May 2023
Accepted: 15 August 2023
Published: 12 September 2023

Keywords
Determining factors
Economics
Education
Learning strategy
Spiral progression approach
Teacher readiness.

ABSTRACT

The Philippine K-12 curriculum embraces the spiral progression approach as a learning strategy that revisits and reinforces themes throughout a student's educational journey, gradually increasing their complexity. Despite the abundance of literature on spiral progression in education, there is limited research on teachers' readiness to implement this approach, specifically in the field of economics. This study aims to address this gap by evaluating teachers' readiness based on their profiles and knowledge of economics during the first and second grading periods. Through descriptive analysis, this paper provides insights into teachers' readiness and the necessity of utilizing the spiral progression approach to achieve the goal of producing globally competitive graduates. The study involved 29 social studies teachers selected through the "side judgment" purposive sampling technique, which was the most appropriate for this study's purpose. The findings indicate that teachers' readiness is positively influenced by factors such as educational attainment, specialization, teaching experience, mentoring received, and training attended. However, age and meetings attended do not directly affect teachers' readiness. These results contribute to both theoretical understanding and the practical application of teacher readiness in implementing the spiral progression approach. Moreover, this study sheds light on the readiness of teachers to use the spiral progression approach when teaching economics. The analysis provides valuable insights for both researchers and educators, facilitating a deeper understanding of teacher readiness and emphasizing the importance of implementing the spiral progression approach to produce globally competitive graduates.

Contribution/Originality: This study focuses specifically on teachers' readiness to implement the spiral progression approach in the field of economics within the Philippine K-12 curriculum. Moreover, this study fills a gap in the previous literature by providing insights into teachers' readiness in this specific subject area.

1. INTRODUCTION

Educational reform is imperative in the modern world, as progress is being made in various other areas of life (Ismailova, Khimmataliev, Khashimova, Baybaeva, & Ergashev, 2020). The decline in academic performance among Filipino students has prompted the need for a comprehensive overhaul of the country's educational system (Orbe, Espinosa, & Datukan, 2018). One of the reforms introduced is the K-12 curriculum, implemented in 2012, which advocates for the adoption of a spiral progression approach to address educational challenges (Dunton, 2019; Orale & Uy, 2018; Quintos et al., 2022). This innovative approach to basic education emphasizes the introduction, reinforcement, and expansion of knowledge from an early age and throughout the learning process (Mangali, Tongco, Aguinaldo, & Calvadores, 2019). The scope and sequence of topics and skills follow a spiral progression,

with increased depth at each grade level (Amirul, 2021). Crucial concepts and connections between disciplines serve as focal points that are revisited regularly to facilitate students' deeper understanding as they progress (Ke, Sadler, Zangori, & Friedrichsen, 2021). Furthermore, the interdisciplinary nature of the spiral progression method ensures the integration and coherence of knowledge, surpassing the limitations of compartmentalized approaches (Perez, Bongcales, & Bellen, 2020). As students master a primary topic or skill, they advance to more in-depth information in subsequent lessons, reinforcing and building upon their existing knowledge (Cabansag, 2014). The spiral progression approach also incorporates increasing levels of difficulty, allowing for the achievement of higher-level objectives during subsequent revisits (Woodward, 2019).

The spiral progression approach is, arguably, an impressive development in education. Tirol (2022) suggested that spiral progression enables students to acquire knowledge and skills suitable for their developmental and cognitive levels as it eliminates divisions between phases of schooling and strengthens retention and mastery of skills and concepts as they are revisited and associated with one another. Thus, in spiral progression, students are given opportunities to study topics in which various subjects might be merged (Aquino, 2015). Furthermore, Martin (2009) highlighted that the spiral progression approach enables teachers to design activities, lessons, and projects that cater to the developmental phase of students' thinking, going beyond mere identification (Resurreccion & Adanza, 2015). This approach also minimizes topic overlaps and abrupt transitions between levels, promotes a learner-centered approach, emphasizes formative and authentic assessment, and addresses misconceptions (Cabansag, 2014). Its primary aim is to foster comprehension and the application of knowledge, rather than rote memorization for the purpose of passing exams (Tan, 2012). The spiral progression method holds particular significance in solidifying understanding over periodic intervals, as students continuously revisit fundamental concepts while new subjects and ideas are introduced into the curriculum (Tan, 2015). Ireland and Mouthaan (2020) emphasized that the spiral progression strategy mitigates disruptions between different schooling phases, facilitates the learning of themes and skills that align with students' developmental and cognitive stages, and enhances retention and mastery of topics and skills.

Despite the full implementation of the spiral progression approach in the effort to provide quality education, spiral progression is still not being used effectively in schools because teachers struggle to adopt it (Quintos et al., 2022). Since it is difficult to teach something without full mastery, teachers need more time to become experts in all areas and develop innovative methods of instruction (Igcasama, 2021). Therefore, there is a need for concrete programs and training in the spiral progression approach (Garcia, 2021) as educators are not sufficiently trained and lack the necessary preparation to employ the spiral approach (Orbe et al., 2018). In addition to inadequate educational resources, equipment, and other school facilities (Decano, Paring, & Cereno, 2021), new concepts or ideas are introduced either too fast or too slowly, and there is a shortage of skilled teachers (Dunton, 2019). De Dios (2013) stated that due to curriculum incoherence, the spiral curriculum is one of the main education difficulties in the United States. Moreover, Resurreccion and Adanza (2015) pointed out that it will take time to determine whether or not the implementation of a spiral curriculum has resulted in better educational opportunities for students and the community as a whole. Ely (2019) noted that in the spiral progression approach, it is crucial that teachers emphasize skill mastery as a means of raising students' academic achievement. Despite the crucial insights from the literature, studies evaluating the teacher-related factors that influence the successful implementation of the spiral progression approach in teaching economics are scarce. Thus, this serve as the main objective of the current study.

Until now, there have been limited evaluations of the spiral progression approach in the Philippines, and none in the specialized domain of economics. Thus, this work bridges the gap in the current literature by exploring the teacher-related factors that influence the successful implementation of the spiral progression approach in teaching economics. Additionally, the insights from this study have crucial implications for stakeholders. The remainder of this paper is organized as follows: the next subsection presents a review of the literature on the spiral progression

approach; the methodology is detailed in Section 2; Section 3 presents the study results and Section 4 the discussion of these results; lastly, Section 5 contains the concluding remarks.

1.1. Spiral Progression Approach

The spiral progression approach is an instructional method aimed at optimizing cognitive growth and enhancing learning outcomes (Batidor & Casinillo, 2021). Rooted in the constructivist learning framework proposed by Bruner (1960), this approach emphasizes beginning instruction with familiar or meaningful topics for students. Bruner (1966) explained that the spiral progression approach involves consistently moving forward while periodically revisiting fundamental concepts and expanding the content of lessons. It introduces learners to a wide range of topics and disciplines, continually reinforcing them and gradually increasing the level of difficulty (Igcasama, 2021). Implementing this strategy requires teachers to have a clear understanding of students' growth and development (Wilson, 2009). In a spiral curriculum, multiple topics are covered within a limited timeframe. However, Resurreccion and Adanza (2015) pointed out that teachers typically allocate less than 30 minutes of instructional time per year to around 70% of the addressed topics, resulting in students failing to acquire essential learning competencies.

Moreover, the spiral progression approach is not substantially different from other theories, according to Veladat and Mohammadi (2011). Spiral curricula have been described by Igcasama (2021) and Batidor and Casinillo (2021) as all-encompassing plans that guarantee annual review and progression through tiny and logical phases and important targets of mastery. The implementation of the K-12 curriculum in the Philippines established a pedagogical structure based on spiraling content (de Ramos-Samala, 2018). This represents a novel approach to the Philippine educational system's methods of instruction and assessment (Montebon, 2014). Martin (2009) pointed out that a spiral curriculum is a design framework that constructs lessons, activities, and projects to help students learn how to think, not just what to think. This is a huge help to teachers. Progression is the learner's personal growth as they use their education and the skills they acquire to improve their skills, knowledge, and understanding in more challenging situations (Fuller & Unwin, 2004; Zimmerman, 2002). Thus, continuity in education is a system of methods, features, and opportunities that offer students both challenge and success (Fredricks, Blumenfeld, & Paris, 2004).

2. METHODOLOGY

This study employed a quantitative approach within a descriptive research design to investigate the characteristics of the population and phenomenon under study (Vaismoradi, Turunen, & Bondas, 2013). Descriptive statistics were utilized to analyze the collected data, providing a summary of the key findings (Deeks, Higgins, & Altman, 2019). The study aimed to contribute to scientific knowledge and enhance understanding of a specific problem, thus falling within the realm of basic research. The study was conducted at the Lapu-Lapu City Division, District 8, Department of Education, focusing on a sample of 29 economics teachers selected through the side judgment purposive technique, which allows for unbiased generalizations about the specific population (n = 29). The research instrument was adapted from previous studies (Quintos et al., 2022) and assessed teachers' profiles and readiness in grading economics topics using a 5-point Likert scale. The statistical analysis comprised descriptive statistics and multiple regression analysis, which aimed to determine the relationship between teachers' profiles and their readiness.

3. RESULTS

Table 1 presents the distribution of the respondents by age, highest educational attainment, field of specialization, and teaching experience. The descriptive findings revealed that 12 respondents (41%) belonged to the 36-45 age group, indicating that the majority of the teachers were below the age of 40. Alufohai and Ibhafidon's

(2015) study supported the notion that teachers' ability to impart knowledge significantly impacts student progress. Previous studies have shown that teacher characteristics such as age and years of experience influence teacher effectiveness. For instance, Zafer and Aslihan (2012) found that senior high school teachers aged 41 and older demonstrated greater effectiveness and superior classroom management skills compared to younger teachers. Similarly, Aloka and Bojuwoye (2013) discovered that younger teachers were more prone to making hasty decisions and lacked careful assessment in handling disciplinary issues compared to their more experienced counterparts.

Table 1. Relevant characteristics of the teacher respondents.

Characteristics		Frequency	Percentage
Age	56 and above	0	0
	46-55	6	21
	36-45	12	41
	26-35	9	31
	25 and below	2	7
Highest educational attainment	Units toward a doctorate	4	14
	Full master's degree holder	4	14
	Units toward a master's degree	13	45
	Bachelor's degree	8	27
Field of specialization	Social studies	29	100
Teaching experience	15 years and above	1	3
	11-15 years	4	14
	6-10 years	15	52
	0-5 years	9	31
Total		29	100

Regarding the highest educational attainment of the teachers, the majority had pursued post-graduate degrees, with 13 (45%) having units in a master's program, 4 (14%) holding a full master's degree, and 4 (14%) having units in a doctoral program. Research by Liu (2021) suggested that higher levels of education indicate greater human capital development and may reflect better academic motivation and cognitive skills. However, Harris and Sass (2011) noted that while many educators pursue higher education, the impact of higher degrees on student achievement remains inconclusive. In terms of their field of specialization, all 29 (100%) teachers were social studies teachers. Quintos et al. (2022) highlighted that teachers' preparedness to utilize the spiral progression method depends heavily on their area of expertise. Hotaman (2010) emphasized the importance of specific knowledge and skills in professional career fields, such as in teaching a specialized subject. Regarding teaching experience, 15 respondents (52%) had 6-10 years of service, indicating that the majority of teachers could be considered experienced. Araujo, Carneiro, Cruz-Aguayo, and Schady (2016) categorized teachers with 0-3 years of experience as "rookie" teachers and those with more than three years of experience as "experienced" teachers.

Table 2. Training attended.

Training attended	Frequency
A lead or resource teacher works in the teacher resource center, which offers materials for professional development.	20
Professional organizations, regional centers, the State Department of Education, and other groups offer conferences outside the district.	14
Immersion or internship activities involve a teacher spending a significant amount of time working with experts in his field in a lab or industrial setting.	15
Curriculum, instruction, or student assessment.	12

Table 2 shows that the teachers had attended different types of training and seminars. Twenty teachers (69%) had visited a teacher resource center, which houses professional development resources and is staffed by lead or resource teachers; fifteen teachers (52%) had participated in immersion or internship activities, in which they spent an extended period of time working in a laboratory or industrial setting; fourteen teachers (48%) had attended

conferences hosted by professional organizations outside their school district, and lastly, 12 (41%) had attended the curriculum, instruction, or student assessment training programs. The empirical insights of Dunton (2019) suggested that training programs better prepare and equip teachers for the implementation of the spiral progression approach. Similarly, by attending training and seminars and collaborating with their fellow teachers, practitioners can easily adopt the spiral progression approach (Resurreccion & Adanza, 2015).

Table 3. Technical support provided to teachers.

Time	Frequency	Percentage
Once a week	4	14
2 or 3 times a week	16	55
Every other month	4	14
Once or twice a year	5	17
Total	29	100

Table 3 presents the results of the technical support provided to teachers. It shows that 16 (55%) of the teachers received technical support 2 or 3 times a week. Five (17%) said that they received technical support once or twice a year, while 4 (14%) received technical support once a week and another 4 (14%) received technical support every month. Berger, Rugen, Woodfin, and Education (2014) suggested that teachers need technical support to make sure that school programs are implemented properly and that, in the end, higher or better learning outcomes are reached. Adequate support should have an effect on performance and, most importantly, on the well-being of the teachers in the school (Rebele & Pierre, 2019). Sima, Gheorghe, Subić, and Nancu (2020) argued that technical support gives people basic information to help them find and use up-to-date information and resources, as well as giving people intensive help to build their skills and make changes to the education system.

Table 4. Assessment of teachers' spiral progression readiness in terms of the extent of knowledge of 1st and 2nd grading topics.

Topics	Mean	SD	Interpretation
First grading			
Important concepts in economics	3.29	0.80	Very well-mastered
Needs and wants	3.35	0.72	Very well-mastered
Business organization	3.26	0.65	Very well-mastered
Total	3.30	0.08	Very well-mastered
Second grading			
Supply and demand	3.75	0.72	Extremely well-mastered
Interaction between supply and demand	3.28	0.65	Very well-mastered
Relationship between market and government	3.48	0.67	Very well-mastered
Total	3.29	0.04	Very well-mastered

Table 4 presents an assessment of teachers' spiral progression readiness in terms of their knowledge of first and second grading topics. The mean scores and standard deviations (SD) for each topic are provided, along with an interpretation of the level of mastery. The results achieved a mean score of 3.30 (0.08) for the first grading and 3.29 (SD = 0.04) for the second grading topics, which both characterized the teachers' knowledge as very well-mastered. Based on the data in Table 4, all topics were rated at least very well-mastered. According to Quintos et al. (2022), for instructors to achieve the level of "learning professionals," effort is required. Consequently, the findings are a positive sign of teachers' readiness for the spiral progression approach. As a subject specialist, a teacher's job is to do four basic things that require considerable subject knowledge (Backman & Barker, 2020). Specialist teachers know how to bring out the best in their students because they have the experience, knowledge, and skills to do so (Schuck & Lambert, 2020). Nasimovna (2022) emphasized that a specialist does not teach things in which he or she

is not interested or of which they have little knowledge. The findings indicate that the teachers know a lot about a certain subject and are experts in it. They are knowledgeable about the subjects they teach.

Table 5. Multiple regression analysis of profile variables and readiness.

Variables	Coefficients	SE	P-value
Age	-0.079	0.065	0.102
Educational attainment	0.081	0.022	0.042
Specialization	0.002	0.015	0.024
Teaching experience	0.075	0.041	0.029
Meetings attended	0.004	0.073	0.624
Mentoring received	-0.080	0.035	0.038
Training received	-0.082	0.063	0.020

Table 5 presents the relationships between the teacher respondents' profiles and their readiness for the spiral progression approach. The variables in the regression model include age, educational attainment, specialization, teaching experience, meetings attended, mentoring received, and training received. The coefficients represent the estimated effects of each variable on the dependent variable. The standard errors (SE) indicate the variability or uncertainty associated with each coefficient estimate. As shown, the computed p-values of educational attainment (0.0421), specialization (0.0243), teaching experience (0.0290), mentoring received (0.0376), and training received (0.0201) were below the 0.05 level of significance. This suggests that teachers' level of preparedness is determined by their maximum educational attainment, specialization, experience, mentoring, and training. However, age and meetings attended did not have a significant effect on teachers' level of readiness for the spiral progression approach, with p-values of 0.1024 and 0.6241, respectively.

4. DISCUSSION

This study assessed teachers' readiness for the spiral progression approach. Various insights in the literature emphasized the need to determine the teachers' readiness. The teachers' demographic profiles and their knowledge of first and second grading economics topics were analyzed to answer the research question. The multiple linear regression analysis of the profiles of the teacher respondents showed that five variables had a significant effect. For instance, the results showed that educational attainment has a significant direct influence on the readiness of teachers. This aligns with Zhang and Zhu (2008), who noted that highly educated teachers are indeed more successful in the implementation of the teaching method, particularly in maximizing students' academic achievement. Similarly, specialization has a significant relationship with teacher readiness; Quintos et al.'s (2022) empirical research showed that specialization contributes to teachers' readiness for the spiral progression approach. In addition, teaching experience has a significant effect on teachers' readiness; Ismail, Sawang, and Zolin (2018) noted that teacher effectiveness was significantly influenced by teacher experience. Rice (2010) also emphasized that teachers' experience is a key factor that can affect their performance. Thus, teaching experience is one of the factors that must be taken into account for the successful implementation of the spiral progression approach. Moreover, mentoring and training received also have significant relationships with teacher readiness. According to Smith (2022) and Arviv and Levi-Keren (2023), mentoring creates the necessary links between theory and practice. Cakmak, Gündüz, and Emstad (2019) also suggested that teacher training is important for both new teachers and those who have been teaching for a long time to achieve successful innovation in education. Thus, mentoring and training help teachers understand the application of the spiral progression approach, beyond merely the theory.

5. CONCLUSION

Despite the prior studies of the implementation of the spiral progression approach in Philippine education, research on teachers' readiness in terms of the extent of their knowledge on the subject of economics is scarce.

Thus, this study has investigated the relationship between teachers' profiles and the extent to which their knowledge of teaching economics is adequate for the spiral progression approach. The findings of this study have shown that educational attainment, specialization, teaching experience, mentoring received, and training received each have a significant direct effect on teacher readiness for the spiral progression approach, whereas age and meetings attended have no direct effect on teachers' readiness. This insight contributes to both theory and practice in understanding teachers' readiness for the spiral progression approach. As the implementors of the approach, teachers have a direct impact on students; therefore, it is important to understand the factors that contribute to teachers' successful implementation of the spiral progression approach.

Funding: This study received no specific financial support.
Institutional Review Board Statement: The Ethical Committee of the Cebu Technological University, Philippines has granted approval for this study on 1 June 2022 (Ref. No. ERCRC02417).
Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: Contributed to the writing of the introduction and methodology sections, facilitated the acquisition and provision of data necessary for the study, D.C.; responsible for providing the results of the study and led the discussion and interpretation of those results, R.S. Both authors have read and agreed to the published version of the manuscript.

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