



Taiwanese Elementary Teachers' Perceptions about and Implementation of Formative Assessments in Teaching

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Abstract

The purpose of this study is to investigate Taiwanese elementary teachers' perceptions about and their implementation of formative assessments. To address this purpose, three research questions were developed:

- (1) How do Taiwanese elementary teachers view formative assessments?
- (2) How often do Taiwanese elementary teachers implement different formative assessments?
- (3) Is there any relationship between elementary teachers' perceptions and implementation and their demographic and teaching conditions?

302 Taiwanese elementary teachers participated in a survey, from which the results show that: (1) Although most elementary teachers have positive perceptions about formative assessments, they do not use formative assessments frequently; (2) There is a significant relationship between teachers' perceptions and implementation and their age, length of teaching, highest degree, and class size.

Introduction

According to research, formative assessment is an essential tool for preparing students to become active and engaged citizens in democratic institutions. Firstly, formative assessments can provide students with equal access to educational opportunities, ensuring that each student's unique learning needs are addressed [1]. Secondly, formative assessments can enhance students' self-governing skills, which are crucial for democratic participation. Through ongoing feedback and reflection, students can learn to evaluate their own progress and make informed decisions [2]. Lastly, formative assessments can promote critical thinking skills. When used correctly, formative assessments require higher-order

thinking skills, such as application, analysis, and synthesis from Bloom's Taxonomy [1,3].

In summary, formative assessment is a valuable tool that can support students' development as active and responsible citizens. By providing ongoing feedback, promoting self-governing skills, and fostering critical thinking, formative assessments can help students reach their full potential and contribute to democratic society.

The purpose of this study is to investigate Taiwanese elementary school teachers' perspectives on and practices in formative

assessment. To achieve this purpose, three research questions were developed:

- (1) What are the perceptions of Taiwanese elementary school teachers towards formative assessment?
- (2) How do Taiwanese elementary school teachers implement different formative assessment methods?
- (3) Are there any relationships between Taiwanese elementary school teachers' perceptions and practices in formative assessment and their demographic and teaching conditions?

Literature Review

The Constructivist Learning Theory provides the theoretical framework for this study, drawing upon the works of theorists Jean Piaget, Lev Vygotsky, and Benjamin Bloom [4]. According to constructivism, the goal for students is to acquire basic skills through experiential learning. Teachers use various methods and strategies to attain this objective, while also adapting their instruction to meet individual student needs based on data [5].

The conceptual framework is supported by research that illustrates the impact of formative assessment on student learning outcomes. The framework demonstrates how formative assessment models, including those created by teachers and those that involve self-assessment by students, can influence the results of students' summative assessments. Moreover, the framework highlights the importance of establishing professional learning communities that use formative assessment results to drive and modify instruction, which can ultimately increase student motivation and learning outcomes. Therefore, a professional learning plan focused on developing such communities is essential.

The research conducted by Black and William [2] provided valuable insights into the nature of formative assessment, highlighting three key features:

1. Formative assessments are often not well understood and weakly implemented by teachers.
2. The context of national and local requirements for certification and accountability exerts a powerful influence on the practice of formative assessment.
3. The implementation of formative assessments requires significant changes in both teachers' perceptions of their role in relation to their students and in their classroom practice.

Methodology

With a comprehensive review of literature, the investigators designed a survey entitled "Survey of Elementary Teachers' Perceptions about and Practices of Formative Assessment in Taiwan" to investigate Taiwanese elementary teachers' perceptions and practices. A total number of 385 copies of the survey were sent to Taiwanese elementary teachers.

Since the data collection was completed in Taiwan, the survey questionnaire was written in traditional Chinese. Three university teacher education professors in Taiwan reviewed the survey to

identify any confusing wording or incomprehensive items. Based on their responses and comments, the survey was revised to produce the study instrument.

The survey contains 31 items, which are divided into four sections: (1) demographic information, (2) teacher's perceptions about formative assessments, (3) teacher's implementation of formative assessments in their classroom, and (4) an open-ended question about any obstacle(s) that has (have) prevented teachers from implementing effective formative assessments.

Of the total of 31 question items on the survey, the first seven questions request demographic data. Items 8-17 are Likert-based questions assessing elementary teachers' perceptions about formative assessment. Items 8-17 were scored on a four-point continuum ranging from 1 point (strongly disagree) to 4 (strongly agree). Items 18-30 are Likert-based questions assessing elementary teachers' implementation of different formative assessments. Items 18-30 were scored on a four-point continuum ranging from 1 point (rarely or never) to 4 (all of the time). Item 31 is an open-ended question asking teachers to explain (in written format) any obstacle that has prevented them from implementing formative assessments.

The data collection was conducted in June-July 2019 in 14 elementary schools located in three areas in Taiwan. The data collection was completed in three phases: (1) initial phone contact with school principals, (2) initial on-site visit and survey distribution to teachers, and (3) on-site revisit and survey collection.

The data was collected from 14 elementary schools located in Taipei, Tainan, and Pingtung in Taiwan. A total number of 385 survey questionnaires were sent to teachers and 302 completed and valid questionnaires were returned. The return rate was 78.4%.

Among the 302 participating elementary teachers, 4(1.3%) of them are 25 years old or younger, 55(18.2%) are between 26-35, 126(41.7%) are between 36-45, 107(35.4%) are between 46-55, and 10(3.3%) are 56 years old or older.

As for teaching experience, the shortest length of teaching is 0.5 years, and the longest length of teaching is 35 years. The 302 participating teachers have an average of 16.6 years of teaching experience.

As for the highest educational degree, 119 (39.4%) teachers hold a bachelor's degree, 175(57.9%) hold a master's degree, 5(1.7%) hold a doctoral degree and 3(1%) hold other degrees.

As for grade level they teach, 85(28.1%) teachers teach lower elementary grades (grades 1-2), 115 (38.1%) teach middle elementary grades (grades 3-4) and 102(33.8%) teach higher elementary grades (grades 5-6).

Results and Findings

This study was developed to investigate Taiwanese elementary teachers' perceptions about formative assessments and how they implement formative assessments. To address this purpose, the survey questionnaire was designed to address five issues based on the three research questions in section one. The five issues are:

(1) What are Taiwanese elementary teachers' perceptions about the influence of formative assessment on students?

(2) What are Taiwanese elementary teachers' perceptions about the influence of formative assessment on teachers?

(3) How often do Taiwanese elementary teachers implement different formative assessments, such as observations, quizzes, providing feedback, student self-assessment, peer-assessment, and using formative assessment data to inform instruction?

(4) Is there any relationship between Taiwanese elementary teachers' perceptions about formative assessments and their demographic and teaching conditions, such as age, length of teaching experience, highest educational degree, class size and grade level they teach?

(5) Is there any relationship between Taiwanese elementary teachers' implementation of formative assessments and their demographic and teaching conditions, such as age, length of teaching experience, highest degree, class size and grade level they teach?

The results of the study are summarized below with regard to each of five issues.

(1) Elementary teachers' perceptions about the influence of formative assessments on students

Four Likert-based questions were developed to assess teachers' attitudes towards four statements about influence of formative assessment on students: (1) Formative assessments help students to monitor their progress during learning; (2) Formative assessments motivate students to learn because they have a focus on where they are aiming; (3) Formative assessments help students become self-regulated learners by teaching them the skills to monitor and take responsibility for their learning; and (4) Formative assessments help increasing student academic achievement. The percentage of teachers who agree or strongly agree with each statement is 97.3%, 95%, 90.1% and 88.4%.

(2) Elementary teachers' perceptions about the influence of formative assessments on teachers

Six Likert-based questions were developed to assess teachers' attitudes towards six statements about influence of formative assessment on teachers: (1) Formative assessments facilitate a reciprocal learning process between teachers and students; (2) Formative assessments help teachers to create a rigorous learning environment that will challenge students to grow; (3) Formative assessments empower teachers to make sound, informed decisions about their instruction; (4) Formative assessments help teachers to provide students equal access to educational opportunities; (5) Formative assessments help teachers to promote students' independent thinking skills; and (6) Formative assessment help teachers to promote students' critical thinking skills. The percentage of teachers who agree or strongly agree with each statement is 94%, 93.7%, 89%, 86.5%, 83.8%, and 76.1%.

(3) The frequency elementary teachers practice different formative assessments

13 Likert-based questions were developed to assess teachers' practices of different formative assessments, including (1) calling on students to answer questions; (2) circling the room to monitor student progress; (3) informal observation; (4) providing effective feedback; (5) using formative assessment data to plan or modify instruction; (6) assigning homework; (7) reviewing students' portfolios; (8) engaging students in self-assessment; (9) asking students to do individual or small group presentations; (10) giving short quizzes; (11) asking students to complete self-reflection; (12) engaging students in peer-assessment, and (13) asking students to keep a learning log. The percentage of teachers who do each of these practices most or all of the time is 70.7%, 67.5%, 64.8%, 59.5%, 56.5%, 51.5%, 33.6%, 32.7%, 32.5%, 31.8%, 31.3%, 25.2%, and 17.9%.

(4) The relationship between Taiwanese elementary teachers' perceptions about formative assessment and their demographic and teaching conditions

Multiple regression analyses were performed to determine if there is a relationship between teachers' perceptions and their age, length of teaching, highest degree, class size and grade level they teach. The data show there is a significant positive relationship between teachers' perceptions and their age, length of teaching and highest degree. The data also show that there is a significant negative relationship between teachers' perceptions and their class size. There is no significant relationship between teachers' perceptions and the grade level they teach.

(5) The relationship between Taiwanese elementary teachers' practices of formative assessment and their demographic and teaching conditions

Multiple regression analyses were performed to determine if there is a relationship between teachers' practices and their age, length of teaching, highest degree, class size and grade level they teach. The data show there is a significant positive relationship between teachers' practices and their age, length of teaching and highest degree. The data also show that there is a significant negative relationship between teachers' practices and their class size. There is no significant relationship between teachers' perceptions and the grade level they teach.

Based on the data results, the researchers have the following findings:

(1) Most Taiwanese elementary teachers have positive perceptions about the influence of formative assessments on students.

(2) Most Taiwanese elementary teachers have positive perceptions about the influence of formative assessments on teachers.

(3) Most Taiwanese elementary teachers believe that conducting formative assessments is more beneficial to students than teachers themselves.

(4) Although most Taiwanese elementary teachers have positive perceptions about formative assessments, some teachers (33.1%) do not use formative assessments frequently

(most of or all of the time) in teaching. The responses to the last open-ended question reflect that the main reasons include lack of time, huge achievement gap among students, large class size, and lack of parental support.

(5) There is a significant positive relationship between teachers' perceptions and implementation and their age, length of teaching and highest degree. The older the teachers are, the longer their teaching experience is, the higher their degree is, the more positive perceptions they have and the more often they implement formative assessments.

(6) There is a significant negative relationship between teachers' perceptions and implementation and their class size. The larger the class they reach, the more negative perceptions they have and the less often they implement formative assessments.

(7) The grade level teachers teach does not play a significant role in teachers' perceptions and implementation.

Conclusions

Formative assessment is the monitoring of student progress during instruction that includes feedback and opportunities to improve [6]. A groundbreaking review by Black and William [2] demonstrated that formative assessment can dramatically increase student achievement, especially among lower achievers.

In spite of the importance of formative assessment, according to the data presented above, there are many Taiwanese elementary teachers who still have misconceptions towards this assessment tool and do not implement it as frequently as expected, partially due to the traditional belief that student achievement and progress

can only be demonstrated through summative assessments.

Research on Taiwanese teachers' perceptions about and practices of formative assessments is very limited. This study was initiated to fill this gap, with the hope that suggestions and implications can be provided to schools, university teacher education programs, and policy makers to better equip teachers with more positive perceptions towards formative assessments and better implementation skills of formative assessments.

Acknowledgment

None.

Conflict of Interest

No conflict of interest.

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