

The Mediating Effect of Content Knowledge for Teaching Reading to Learner-centered Strategy and Teaching Effectiveness

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The objective of this study is to know the pre-service teacher's content knowledge for teaching reading, the use of learner-centered strategy, and if this strategy and content knowledge leads to teaching effectiveness. The study will answer the following questions: (1) What is the level of pre service teachers content knowledge for teaching reading, learner-centered strategy, and teaching effectiveness? (2) Does content knowledge for teaching reading mediate the effect to learner-centered strategy and teaching effectiveness? There were 60 participants from the University of Rizal System (URS) Pililla campus. Linear regression analysis, reliability analysis, factor analysis, and Sobel test was used to analyze the data. Baron and Kenny's procedure was used in the mediation analysis. The Sobel test revealed that the indirect path from learner centered strategy and teaching effectiveness was significant ($z=-2.059$, $p>.05$). The study revealed that content knowledge for teaching reading mediates the effect to learner-centered strategy and teaching effectiveness.

Keywords: Content-knowledge, Learner-centered strategy

Teaching reading, like other subjects, requires knowledge that goes substantially beyond just being a good teacher. In addition to having strong reading skills, well prepared reading teachers also need to develop deep knowledge of language and text; for example, reading teachers need to understand reading in ways that help them decipher the stumbling attempts of a beginning student or to select appropriate words or text for students of different ability levels. Emerging arguments and evidence suggest that it is this knowledge about reading itself is that poorly understood by

literate adults who do not teach children to read (Brady & Moats, 1997; McCutchen & Berninger, 1999; McCutchen et al., 2002; Moats, 1994; Moats & Lyon, 1996; Phelps & Schilling, 2004; Wong-Fillmore & Snow, 2002).

In the Philippines, it is still a challenging task for elementary teachers to let their students learn to read with comprehension. Training the pre-service teachers to instructional strategies on reading with comprehension is important. However, instructional strategies is only one aspect of teaching that teachers need to learn, thus the pre-service teachers should also be equipped with both the content knowledge for teaching reading and instructional strategies to make them effective in teaching students to read.

Haverback and Parault (2008), believe that if pre-service teachers are trained through quality programs that offer domain specific hands-on experiences, those pre-service teachers may be better prepared when they enter the classroom to meet the individual needs of the students they encounter. The needs of individual students are becoming more important in today's classrooms as the diversity of students continues to grow. They are expected to teach language and reading skills to a growing number of children who have learned, or are in the process of learning, English as their second language. In addition, students enter school with varying levels of knowledge. Some know many sight words and have been exposed to many books, while other live in low social economic status homes where books are not available. Still, other children have cognitive deficits or language delays. All of the abovementioned factors have been found to have an impact with how an elementary school student learns to read (Snow, Burns, & Griffin, 1998).

The objective of this study to know the pre-service teachers content knowledge for teaching reading, if they are using learner-centered strategy and if this strategy and content knowledge leads to teaching effectiveness. The study will also test for the indirect effect of content knowledge in teaching reading to learner-centered strategy and teaching effectiveness. The study can further confirm the use of a specific strategy in teaching reading that will lead to teaching effectiveness.

The study will answer the following questions: (1) What is the level of pre service teachers content knowledge for teaching reading, learner-centered strategy, and teaching effectiveness? (2) Does content knowledge for teaching reading mediate the effect to learner-centered strategy and teaching effectiveness? (3) Does the relationship of learner-centered strategy and teaching effectiveness decreases when content knowledge for teaching reading was added as a third variable?

Content Knowledge for Teaching Reading

The Content knowledge for teaching reading sought to measure three distinctions in the type of content knowledge used in teaching: content knowledge (CK), knowledge of content and students (KCS), and knowledge of content and teaching (KCT). The primary distinction between items in each of

these categories is in how knowledge of reading is used in the work of teaching. Content knowledge items focus on text and language and include, for example, knowledge of what makes a word phonetically regular or what makes one comprehension question different from another. Items in this category do not involve interpreting student work or making teaching decisions. Knowledge of content and student questions requires using knowledge of students. For example, teachers need to understand how students will engage particular text or what characterizes students' reading errors. Items in this category do not involve making teaching decisions (Phelps, 2005).

Reading acquisition is arguably the most complex, developmentally interesting cognitive task that children are expected to undertake while in school. Although there is a growing recognition that certified and highly trained teachers positively influence student learning and development (Darling-Hammond, 2000), the effective teaching literacy skills requires not only knowledge cultivated through basic pre-and in- service programs, but also that educators acquire and apply a sophisticated understanding of the nuances of the English language (Cunningham, 1990). As our education system attempts to identify the most effective strategies to minimize the discrepancies between underserved and more advantaged populations, it is critical that both educators and researchers recognize the powerful impact teacher knowledge of early literacy skills can have on student's long term academic success and continue empirical explorations of exactly how, when, and why teachers have this influence.

However, research inquiries into each step of this process are still on going and we do not yet have the definitive answers we need in order to shift teacher knowledge and its instructional practices in ways that will support literacy development (Cunningham, 1990). Nascent research demonstrate that teacher knowledge is associated with student literacy gains, yet the field continues to grapple with questions such as how teacher knowledge and practices are associated with one another, how disciplinary knowledge is related to responsive teaching or pedagogical content knowledge and how one can best measure these knowledge constructs.

Learner-Centered Strategy

Learner-centered practices have gained attention as a way of enhancing the outcomes of teaching and learning among students. There is a shift from a directive approach in teaching to recognizing more the needs of the learners. According to McCombs and Whisler (1997) learner-centered is defined for the learner and the learning process as a positive learning environment that is created facilitating the success of students. There are 14 learner-centered psychological principles that were formulated by the American Psychological Association task force that are related to students learning, motivation, and individual differences. The integrating factors that affect the learner and his learning are metacognitive and cognitive, affective, developmental, personal

and social, and individual differences. The major features of learner centeredness practices are: (1) the learners are included in the educational decision making process; (2) diverse perspectives of learners are encouraged; (3) individual differences of the learners are accounted for and respected; and (4) learners are co-creators of the teaching and learning process (Magno & Sembrano, 2007)

Teachers' educational beliefs influence their instructional decisions and classroom practices (Pajares, 1992). The personal epistemological beliefs one holds about teaching and learning influences how one interprets instruction and thus engages with the material (Hofer, 2001). Van Berkel and Schmidt (2000) found a relationship between type of instruction, student motivation, and performance. Fundamentally different, learner centered teaching shifts the responsibility of learning on actively engaged students while the teacher becomes a facilitator of the learning process and helps students learn concepts rather than acquire knowledge (Barr & Tagg, 1995; Kember, 1997). Pre-service teachers who experience learner-centered teaching methods as education students do not necessarily translate into the ability to use learner-centered teaching methods as teachers. Both Simmons et al. (1999) and Klein (2001) found that beginning and pre service teachers in secondary science and mathematics believed they taught their students using methods that were based on the assumptions of learner-centered teaching. However, these teachers' practice contrasted starkly with their professed student centered beliefs.

Teaching Effectiveness

According to Scheerens (2004), "teaching effectiveness" or "instructional effectiveness" is the effectiveness of enhancing conditions situated at the teacher and classroom level. Research results in the field of teaching effectiveness are centered on three major factors: effective learning time, structured teaching and opportunity to learn in the sense of a close alignment between items taught and items tested (Scheerens, 2004). Thus, for the pre service teacher's teaching effectiveness involves training experience in different public schools. As a part of their training, pre service teachers study and experience a variety of instructional strategies. The topics are addressed in students' texts, discussed in their base groups, modeled by the professor, and practiced by the pre service teachers in the class as learners. Why is measuring teaching effectiveness so important? Because the evidence produced is used for major decisions about our future in academe. There are two types of decisions: formative, which uses the evidence to improve and shape the quality of our teaching, and summative, which uses the evidence to "sum up" our overall performance or status to decide about our annual merit pay, promotion, and tenure. The former involves decisions to improve teaching; the latter consists of personnel decisions. As faculty, we make formative decisions to plan and revise our teaching semester after semester. Summative decisions are final and

they are rendered by administrators or colleagues at different points in time to determine whether we have a future. These decisions have an impact on the quality of our professional life. The various sources of evidence for teaching effectiveness may be employed for either formative or summative decisions or both (Berk, 2005). According to Berk (2005), a unified conceptualization of teaching effectiveness is proposed to use multiple sources of evidence, such as student ratings, peer ratings, and self-evaluation, to provide an accurate and reliable base for formative and summative decisions. Multiple sources build on the strengths of all sources, while compensating for the weaknesses in any single source. This triangulation of sources is recommended in view of the complexity of measuring the act of teaching and the variety of direct and indirect sources and tools used to produce the evidence. The performance evaluation is a measurement of feedback of instructional effectiveness of the pre-service teachers (Berk, 2005).

Theoretical/ Conceptual Framework

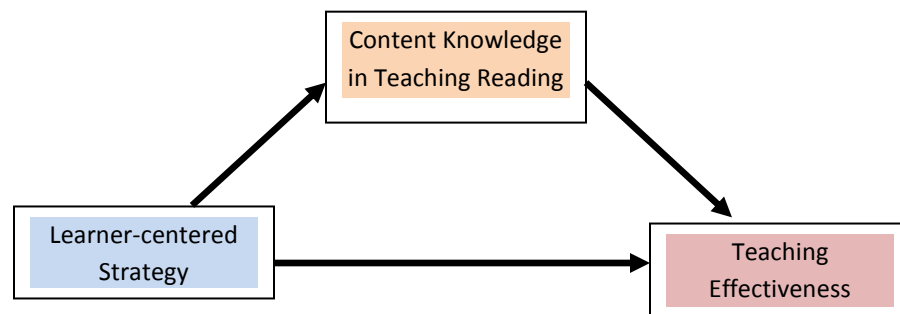


Figure 1. Conceptual Model Showing the Relationship of Learner-centered Strategy, Teaching Effectiveness and Content Knowledge for Teaching Reading

The model shows that learner-centered strategy has a direct effect to teaching effectiveness and that content knowledge is added as a third variable that could mediate the effect of learner centered strategy to teaching effectiveness. It is being conceptualized that content knowledge for teaching reading can serve as a variable that can cause an indirect effect between learner centered strategy to teaching effectiveness. Thus, content knowledge for teaching reading can reduce the direct effect of learner centered strategy to teaching effectiveness. If there will be a mediation effect of content knowledge for teaching reading a pre service teacher will not be effective in teaching using the learner centered strategy without the content knowledge for teaching reading. The direct effect of learner centered strategy to teaching effectiveness will be reduced when content knowledge for teaching reading will be added as a third variable.

The study is anchored on the theory on pedagogical content knowledge by Shulman (1986). He introduced the phrase pedagogical content knowledge

and sparked a whole new wave of scholarly articles on teacher's knowledge of their subject matter and the importance of this knowledge for successful training. In Shulman's theoretical framework, teachers need to master two types of knowledge: (a) content, also known as "deep" knowledge of the subject itself, and (b) knowledge of the curricular development. Content knowledge encompasses what Bruner (as cited in Shulman, 1992) called the "structure of knowledge" the theories, principles, and concepts of a particular discipline. Especially important is content knowledge that deals with the teaching process, including the most useful forms of representing and communicating content and how students' best learn the specific concepts and topics of a subject. "If beginning teachers are to be successful, they must wrestle simultaneously with issues of pedagogical content (or knowledge) as well as general pedagogy (or generic teaching principles)" (Ornstein, Thomas, & Lasley, 2000, p.508). Like other professionals who possess a body of knowledge unique to their profession, teachers need to master the essential content, skills, and strategies required for effective teaching.

Method

Participants

There were 60 participants from the University of Rizal System (URS) Pililla campus. They were fourth year students of the Bachelor of Secondary Education major in English. These participants were done with their teaching practicum in various schools in Rizal and had experienced practice teaching in both elementary and secondary levels.

Instruments

The instruments used in the study: The Teacher Questionnaire of SII (TQ), Learner-centered Practices Questionnaire (LCPQ), and URS Performance Evaluation.

The Teacher Questionnaire of SII (TQ). Items developed to assess teacher knowledge in the two broad topic areas of comprehension-morphology, vocabulary, comprehension strategies and questions, genre, fluency, and other topics related to comprehending the meaning of words and text of word reading (e.g. Birds of a feather flock together. Yes, No, I'm not sure); and word analysis -phonemic awareness, letter sound relationships, word frequency, and other topics related to the reading and decoding of words and their print and sound elements. (e.g. Put a mark (X) for each word: said - high frequency, low frequency, and I'm not sure) (Phelps, 2004).

Internal reliability analysis of the whole scale using the actual empirical data of the study revealed a reliability coefficient based on Cronbach's alpha of .732 and Kendall's coefficient of concordance W of .786 with ANOVA

Friedman's Test using the SPSS software. Out of the twenty items (6-26) under the Knowledge of Structure and Content only 9 items (13, 16, 17, 18, 19, 20, 21, 22, & 23) were included using the principal component factor analysis of the SPSS software.

Learner-Centered Practices Questionnaire (LCPQ). Developed by Magno and Sembrano (2007), the LCPQ is based on the principles of the learner-centered practices (see McCombs, 1997). The items were constructed under the areas of (1) positive interpersonal characteristics (items 1 to 5), (2) encourages personal challenge (items 6 to 10), (3) adopts class learning needs (items 11-15), and (4) facilitates the learning process (items 16 to 19). Using the empirical data from this study the LCPQ yielded an overall reliability or Cronbach alpha of the scale which is .902 indicating high internal consistency of the items. Factor analysis was also done and all of the items fall under the dimensions it should include based on the factor loadings.

University Rizal Systems (URS) Performance Evaluation Measures. The scale is being used by URS for five years now. The evaluation includes Students Evaluation, Peer Evaluation, and Self Evaluation. According to Berk (2005), a unified conceptualization of teaching effectiveness is proposed to use multiple sources of evidence, such as student ratings, peer ratings, and self-evaluation, to provide an accurate and reliable base for formative and summative decisions. Multiple sources build on the strengths of all sources, while compensating for the weaknesses in any single source. This triangulation of sources is recommended in view of the complexity of measuring the act of teaching and the variety of direct and indirect sources and tools used to produce the evidence. The performance evaluation is a measurement of feedback of instructional effectiveness of the pre-service teachers.

Procedure

A letter noted by the dean of the College of Science of the Morong, Rizal campus was given to the to the College of Social Science and Humanities dean of the Pililla campus asking permission to conduct the study. After the approval of the university head administrators, the schedule of the pre-service teachers was noted for possible schedule for the administration of the tests. Token for the pre-service teachers was given for cooperation and motivation for answering the different tests. The first measure that was given to the pre-service teachers was the Teacher Questionnaire of SII, followed by Personal Teaching Efficacy Scale. Student's evaluation of the pre-service teachers as well as their peer and cooperating supervisor and coordinating teacher's evaluation were gathered to measure their instructional effectiveness. After the test administration, data was encoded and statistical computation was done with excel and SPSS software. Data was analyzed and then interpreted.

Data Analysis

The linear regression model was used to identify if there was a mediation effect among the variables of content knowledge for teaching reading, learner centered strategy, and teaching effectiveness. To test the significance of the model, in the ANOVA table, find the f-value and p-value, if the p-value is smaller than the alpha, the model is significant. The “Model Summary” is a test the goodness of fit of the model. Reliability analysis was also done to test internal consistency of the instrument used using the data from the actual respondents. The reliability analysis was interpreted through the output based on the Cronbach alpha. Factor analysis was also done to analyze the data, you do a factor analysis to see if there are really several factors, and if those factors represent the dimensions of task and people skills. Sobel test was also utilized to confirm full or partial mediation from the study.

Sobel test statistic:

$$z = \frac{ab}{(b^2SE_a^2) + (a^2SE_b^2)}$$

where a is the regression coefficient for the relationship between the independent variable and the mediator, b is the regression coefficient for the relationship between the mediator and the dependent variable, SE_a is the standard error of the relationship between the independent variable and the mediator, and SE_b is the standard error of the relationship between the mediator variable and the dependent variables

Results

The data obtained in the study indicates that 48.30 % of the respondents have above average content knowledge for teaching; 50% are using learner-centered strategy and 58.30% have above average teaching effectiveness.

Table 1

The Mean and Cumulative Percentage of Content Knowledge for Teaching Reading, Learner-centered Strategy and Teaching Effectiveness

| Variables | Mean | Percentage Above Mean |
|----------------------------------------|------|-----------------------|
| Content Knowledge for Teaching Reading | 4.22 | 48.30 |
| Learner-centered Strategy | 1.70 | 50.00 |
| Teaching Effectiveness | 1.28 | 58.30 |

Table 2
Model Summary of the Linear Regression Analysis of Content Knowledge for Teaching Reading, Learner-centered Strategy and Teaching Effectiveness

| Model | R | R ² | Adjusted R ² | SE | Change Statistics | | | | |
|-------|-------------------|----------------|-------------------------|-------|-----------------------|----------|----|----|------|
| | | | | | R ² Change | F Change | df | df | p |
| 1 | .262 ^a | .069 | .053 | .1737 | .069 | 4.276 | 1 | 58 | .043 |
| 2 | .366 ^b | .134 | .103 | .1690 | .065 | 4.293 | 1 | 57 | .043 |

a. Predictors: (Constant), Learner-centered Strategy

b. Predictors: (Constant), Learner-centered Strategy, Content Knowledge

c. Dependent Variable: Teaching Effectiveness

The data shows that there is a significant overall relationship of the model wherein the learner centered strategy is the independent variable and teaching effectiveness is the dependent variable ($R=.262$, $p<.05$). Moreover, there is also a significant overall relationship of the model wherein the independent variables learner-centered strategy and content knowledge and the dependent variable is teaching effectiveness ($R=.366$, $p<.05$)

Table 3
ANOVA Table of Content Knowledge for Teaching Reading, Learner-centered Strategy and Teaching Effectiveness

| Model | | SS | df | MS | F | p |
|-------|------------|-------|----|------|-------|-------------------|
| 1 | Regression | .129 | 1 | .129 | 4.276 | .043 ^a |
| | Residual | 1.750 | 58 | .030 | | |
| | Total | 1.879 | 59 | | | |
| 2 | Regression | .252 | 2 | .126 | 4.406 | .017 ^b |
| | Residual | 1.627 | 57 | .029 | | |
| | Total | 1.879 | 59 | | | |

a. Predictors: (Constant), Learner-centered Strategy

b. Predictors: (Constant), Learner-centered Strategy, Content Knowledge 1

c. Dependent Variable: Teaching Effectiveness*

The table shows how well the ANOVA model fits the data. Here we need to take a look at the mean square residual, the smaller the residual in terms of the mean square the more model fits the data. For model 1 the mean square residual is small ($X^2 = .030$, $p<.05$) and the model 2 has a small residual which is statistically significant ($X^2 = .029$, $p<.05$). Therefore, the model fits the data.

Table 4
Coefficients Table of Content Knowledge for Teaching Reading, Learner-centered Strategy and Teaching Effectiveness

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | p | Collinearity Statistics | |
|-------|---------------------------|-----------------------------|------|---------------------------|-------|------|-------------------------|-------|
| | | B | SE | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 1.39 | .058 | | 23.87 | .000 | | |
| | Learner-centered Strategy | -.06 | .032 | -.262 | -2.06 | .043 | 1.000 | 1.000 |
| 2 | (Constant) | 1.14 | .134 | | 8.49 | .000 | | |
| | Learner-centered Strategy | -.05 | .032 | -.205 | -1.61 | .111 | .952 | 1.051 |
| | Content Knowledge | .054 | .026 | .262 | 2.07 | .043 | .952 | 1.051 |

Table 4 shows the beta coefficients (β) which represents the relationships of the variables after the regression analysis procedure. The beta coefficients were significant in the models 1 and 2 ($\beta = -.065$, $p < .05$; $\beta = .054$, $p < .05$). A tolerance of less than 0.20 or 0.10 and/or a variance inflation factor (VIF) of 5 or 10 and above indicates a multicollinearity problem (O'Brien, 2007). In some sense, the collinear variables contain the same information about the dependent variable. If nominally "different" measures actually quantify the same phenomenon then they are redundant. Alternatively, if the variables are accorded different names and perhaps employ different numeric measurement scales but are highly correlated with each other, then they suffer from redundancy. In the table it shows a tolerance value of .952 and VIF of 1.051 meaning that there is no collinearity problem in the variables used in the study. Every variable is unique as used in the study.

In this study the Baron and Kenny (1986) procedure in testing mediation was followed. The first condition for mediation yielded a significant association between learner-centered strategy (IV) and content knowledge for teaching reading (MV) ($\beta = -.065$, $p < .05$). The second condition for mediation was supported by a negative association between learner-centered strategy (IV) and teaching effectiveness (DV) and it yielded a significant negative association ($\beta = -.051$, $p < .05$). The third condition for mediation yielded a significant association between content knowledge for teaching reading (MV) and teaching effectiveness (DV) ($\beta = .054$, $p < .05$). The fourth condition for mediation required that the effect of the IV on the DV should substantially reduce upon the inclusion of the MV in the equation, while the MV should have a significant effect. The fourth condition was met for a) DV1 where the beta coefficient for the relationship learner-centered strategy and teaching effectiveness decreased from $-.219$ to $.019$ ($p < .05$, one tailed). Finally, the Sobel test revealed that the indirect path from learner centered strategy and teaching effectiveness was significant ($z = -2.059$, $p > .05$). Here it is being shown that

there is full mediation, meaning content knowledge for teaching reading mediate the effect to learner-centered strategy and teaching effectiveness.

Discussion

The study revealed that the 48.30 % of the pre service teachers in URS Pililla campus have an above average content knowledge for teaching reading. 50% of them use the learner-centered strategy and 58.30 % have an above average teaching effectiveness.

Moreover, study revealed that content knowledge for teaching reading has indirect effect to learner-centered strategy and teaching effectiveness. The pre-service teachers increased use of the learner-centered strategy will decrease the effect to content knowledge for teaching reading. The negative association between the learner-centered strategy and content knowledge for teaching reading can be explained by citing the characteristic of the strategy. The learner-centered strategy's characteristics is that the learners are included in the educational decision making process which primarily is not applicable for those pupils who are being taught how to read. The use of learner centered strategy makes the pre- service teachers think that they would not need more of the content knowledge in teaching reading since children using these strategy are expected to be learners that are co-creators of the teaching and learning process (Magno & Sembrano, 2004). However, content knowledge for teaching reading has a positive association to teaching effectiveness. The pre-service teacher's increased content knowledge in teaching reading will also increase their teaching effectiveness. This study further supports the concept of Hofer (2001) and Schommer (1990) stating that the personal epistemological beliefs one holds about teaching and learning influences interpretation of instruction and the ways of engagement with the instructional material. Successful teachers know the content and can determine the essential knowledge and skills that are necessary for mastery of the subject in order to integrate them into effective instruction (Langer, 2001).

The study is significant in understanding that the instructional strategy that teachers use in teaching can also affect their content knowledge. If teacher's instructional strategy does not match the content knowledge in specific domain area negative association can occur. The negative association between learner-centered strategy and content knowledge of pre-service teachers does not lead to immediate superior's low evaluation. The immediate supervisor finds the pre-service teachers to be effective in their teaching.

It is recommended that future studies should venture on the teacher-centered strategy in relation to content knowledge in teaching reading. The teacher-centered strategy can be tested for positive relationship to content knowledge for teaching reading and teaching effectiveness. Also, possible increase in sample size can also be done to further investigate positive association between variables specifically between learner-centered strategy and content knowledge in teaching reading.

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