

Lesson Planning: How Do Pre-service Teachers Benefit from Examining Lesson Plans with Mathematics Teaching Practices as an Analytical Lens?

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This article examines K-8 pre-service teachers' (PSTs) engagement in lesson plan modification using the eight Mathematics Teaching Practices (MTPs) in *Principles to Actions*, the most recent landmark publication of framework by National Council of Teachers of Mathematics (NCTM) in the U.S. The activity consisted of four phases that involved the analysis and modification of an existing lesson plan. Fifty-seven PSTs participated in the activity throughout the semester, and data from each phase was analyzed using the inductive content analysis approach. PSTs' initial conceptions of lesson planning reflected little on teaching practices (i.e., the MTPs) with more emphasis placed on the form - rather than function - of lesson elements. With the opportunity to interpret MTPs and analyze lesson plans using MTPs as an analytical lens, PSTs demonstrated various interpretations of MTPs, made efforts to incorporate MTPs into lessons, and attended to the interwoven nature of MTPs. This article also shares the challenges, conflicts, and tensions reported by PSTs during their participation of lesson plan modification; as such, the results from this study will inform the research examining the pedagogical (im)possibilities for utilizing MTPs in mathematics teacher training programs.

I. Introduction

Within the wide range of course activities across mathematics methods courses (Kastberg, Sanchez, Edenfield, Tyminski, & Stump, 2012; Taylor & Ronau, 2006), writing lesson plans serves as one of the most common activities and a core feature of teacher education (John, 2006; Taylor & Ronau, 2006). Lesson plans are intended to reflect teachers' thinking on the delivery of content and strategies to support and engage students in learning; thus, like textbooks or student artifact templates (i.e., worksheets), a lesson plan is an essential document that guides classroom instruction (Park, 2007; Ding & Carlson, 2013; Forbes & Davis, 2010). However, there is an increasing concern from the field and in the literature that pre-service teachers (PSTs) need support in developing the skills to write lesson plans (Park, 2014; Remillard, Herbel-Eisenmann, & Lloyd, 2011; Zazkis, Liljedahl, & Sinclair, 2009). Some mathematics teacher educators (MTEs) go so far as to argue that mastery of delivery and classroom interactions actually take priority over writing lesson plans (John, 2006; Mutton, Hagger, & Burn, 2011). In light of the reality of this situation, although PSTs may still need to write lesson plans in methods courses, it is imperative that MTEs make these opportunities more explicit and purposeful so that lesson plans can serve as the living

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documentation of - as well as provide the space for - the preparation, implementation, and improvement of PSTs' teaching.

This article reports a course activity that supports the pedagogical design capacities of PSTs by using the eight Mathematics Teaching Practices (MTPs) identified in *Principles to Actions: Ensuring Mathematical Success for All* (NCTM, 2014a). Specifically, the PSTs in this study experience a task of critiquing and modifying a lesson plan using *Principles to Actions* as an analytical lens. In doing so, PSTs have opportunities to internalize the curricular process of adapting or improvising as conceptualized in the framework of pedagogical design capacity (Brown & Edelson, 2003) and better understand the ways a lesson plan can ensure principles become actions of teaching and learning. Our research questions include the following: (a) To what extent can PSTs be supported to understand and utilize MTPs while critiquing and modifying an existing lesson plan? (b) What challenges and issues do PSTs face while utilizing MTPs in lesson plan critique and modification? Although these principles were written by mathematics educators in the U.S., this updated framework reflects extensive research and experience in international mathematics education on effective mathematics teaching practices (Leinwand, Huinker, & Brahier, 2014). Therefore, an examination of the ways PSTs process these practices as they critique and revise a lesson plan is warranted to inform the international community of mathematics teacher educators.

II. Literature Review

1. Pedagogical design capacity

According to Brown and Edelson (2003),

pedagogical design capacity refers to teacher ability to design learning activities using existing resources, assess current needs, and devise appropriate strategies to achieve instructional goals. They introduced the construct to better understand teachers' curricular thinking and behavior regarding three distinct patterns of curriculum use: offloading, adapting, and improving. Offloading indicates a higher degree of adherence to the curriculum than designed originally; adapting refers to the practice of using original curriculum materials along with other design elements for instruction; and improvising refers to the teacher practice of implementing his or her own designs for instruction. Further, Brown (2009) proposed specific ways for teachers to interact with curriculum materials: selecting a curricular material, interpreting it, negotiating between the designer's intentions and the teacher's realities, and ultimately creating new materials reflecting goals and needs of the current setting.

2. Mathematics teaching practices

Mathematics Teaching Practices (MTPs) in *Principles to Actions* (NCTM, 2014a) include the following: (1) MTP1: Establish mathematics goals to focus learning, (2) MTP2: Implement tasks that promote reasoning and problem solving, (3) MTP3: Use and connect mathematical representations, (4) MTP4: Facilitate meaningful mathematical discourse, (5) MTP5: Pose purposeful questions, (6) MTP6: Build procedural fluency from conceptual understanding, (7) MTP7: Support productive struggle in learning mathematics, and (8) MTP8: Elicit and use evidence of student thinking.

The eight MTPs are a relatively new framework meant to support the principle of "strengthening the teaching and learning of mathematics...which represent a core set of high-leverage practices and essential teaching skills necessary to promote deep

learning of mathematics” (NCTM, 2014a, p. 9), which “need to be consistent components of every mathematics lesson” (NCTM, 2014b, p.3). One of the underlying beliefs of MTPs is that mathematics lessons should be centered on engaging students in solving and discussing tasks that promote reasoning and problem solving (NCTM, 2009; National Research Council, 2012 as cited in NCTM, 2014a). Teachers who hold these beliefs plan lessons that promote student interactions and discourse with the goal of helping students make sense of mathematical concepts and procedures (NCTM, 2014a). Understanding the MTPs is not the same as reciting them, as they provide PSTs with the language needed to imagine and achieve effective teaching practices. Therefore, PSTs need deliberate opportunities to examine the underlying beliefs and meanings of MTPs and connect them to their future practice of teaching mathematics (Remillard, Herbel-Eisenmann, & Lloyd, 2011).

3. Lesson plan critique assignment

Prior studies have reported various teacher conceptions of lesson planning ranging from the belief that experienced teachers do not need to spend much time in lesson planning to the belief that effective teachers create their own instructional materials, as well as the belief that teachers should implement given curriculum materials with fidelity (Ball & Cohen, 1996; Sardo-Brown, 1990). With the development of educative curriculum materials (see David & Krajcik, 2005 for more detailed discussion on a set of design heuristics for educative curriculum materials), educators are urged to view the use of curriculum materials from a new perspective. For example, Drake, Land, and Tyminski (2014) assert that “the development of educative curriculum materials has provided an opportunity for a shift from prior beliefs that ‘good’ teachers do not use curriculum materials to a

conceptualization of good elementary mathematics teachers as those who use educative curriculum materials well” (p. 154). This suggests a shift in the emerging goal of teacher preparation programs - where the focus is not on PSTs’ abilities to create their own instructional materials or enact provided curriculum materials with fidelity, but on supporting PSTs to meet the needs of individual students by using curriculum materials in adaptive or flexible ways (Drake, Land, & Tyminski, 2014). In other words, the experience of making productive changes to existing curriculum materials (Brown, 2009) as part of the effort to develop teachers’ pedagogical design capacity should get more attention in mathematics teacher preparation.

Studies report that a lesson plan critique assignment can provide PSTs with opportunities to examine their knowledge, beliefs, orientations, and professional identities (Brown, 2009; Drake & Sherin, 2006; Forbes & Davis, 2010; Lloyd, 2009; Remillard, 2005). Typically in methods courses, a lesson plan critique assignment examines the following areas: (a) strengths, (b) weaknesses, and (c) ideas for improvement. However, while this assignment structure may encourage PSTs to develop insights on the lesson planning process, a substantial amount of their critiques tend to focus on the superficial features of lesson plans such as the presence/absence of specific elements without further discussion, feasibility of procedures, or affective aspects of teaching (Lloyd & Behm, 2005; Nicol & Crespo, 2006). Other studies analyzing PSTs’ critiques of live or recorded instruction have reported that they, too, often focused on classroom management issues (Barnhart & van Es, 2015; van Es & Sherin, 2002). These studies suggest that PSTs may rely on their previous experiences as students and misinterpret the intention of curriculum materials as teachers. Yet, there is an absence of tools that serve as lenses through which the

curriculum materials can be read, understood, and adapted (Lloyd & Behm, 2005). Therefore, appropriate tools should be provided for PSTs to frame their use of materials, observations of teaching, and experience of scaffolding (Drake, Land, & Tyminski, 2014).

III. Method

1. The mathematics methods course

The elementary mathematics methods course in the study was a required course for PSTs in a university-based teacher education program preparing to teach K-8 mathematics in a Midwestern state in the United States. This methods course is typically scheduled in one of two final semesters before the full-time, semester-long student teaching experience. During the semester, PSTs complete 30 total hours of field experience for all methods course assignments. For this methods course, PSTs were required to observe in classrooms, to develop a lesson demonstrating their knowledge from the methods course, and to reflect on their experience. This was the only mathematics methods course for PSTs broadly covering all aspects of teaching mathematics at the K-8 grade level.

2. Course activity

This methods course included a lesson plan critique and modification assignment to engage them in the process of reading, interpreting, modifying, and adapting or improvising existing curriculum materials. The goal of this assignment was twofold. First, it aimed to support PSTs as they became familiar with the ambitious agenda in the mathematics education community. It was expected that PSTs' interpretations of MTPs would be revealed during the exploration, and that the

knowledge of their interpretations would enable mathematics teacher educators to better support PSTs. Second, the goal of this course assignment was to help PSTs foster a sense of teaching as a design to act on, where teachers must appropriately select, interpret, and modify existing resources (Brown, 2009).

For the assignment, PSTs were asked to examine a lesson plan titled *Geology Rocks Equations* retrieved from <http://illuminations.nctm.org/Lesson.aspx?id=2881>. This lesson was selected based on its relatively stand-alone nature with various lesson components so that PSTs could consider the multiple facets of the lesson plan. This assignment consists of the following four phases: (a) Phase 1: Survey of pre-conceptions of lesson planning, (b) Phase 2: Individual lesson plan critique, (c) Phase 3: Collaborative lesson critique/modification, and (d) Phase 4: Debriefing and reflective discussion.

3. Data collection and analysis

Data was collected at all four phases of the assignment. A total of 57 PSTs who took the course in 2015 gave permission to analyze their work; data from three PSTs who did not consent was excluded from the analysis. The narrative responses from the preconception survey (Phase 1) and reflective discussion in the final debriefing session (Phase 4) were analyzed using the inductive content analysis approach by developing data-driven codes (Decuir-Gunby, Marshall, & McCulloch, 2011). After coding was completed, the frequencies of coded themes were identified. For the tasks in Phases 2 and 3, PSTs were asked to specify the MTPs considered in their critique and modification plan. For the data obtained from Phases 2 and 3, descriptive analysis was utilized to quantitatively report the frequencies with which MTPs were considered by PSTs. In addition, PSTs' written

justifications were also qualitatively examined for specific nuances or patterns that could have been missed during the quantitative analysis.

IV. Results and Discussion

1. Examining PSTs' pre-conceptions of lesson planning (Phase 1)

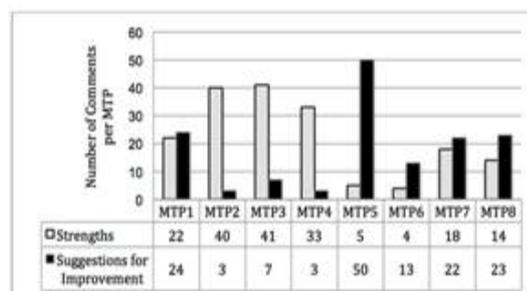
As a part of an asynchronous online session, PSTs responded to this following question: "What are the purposes of lesson planning?" The PSTs demonstrated various conceptualizations of lesson planning, with all 57 PSTs responding that identifying goals was one of the main purposes of lesson planning (100%). Other responses included the following: to monitor student progress (37%), to manage time (35%), to design differentiated instructions/accommodations (28%), to organize effective instructional sequence (23%), to provide a guide for teachers (23%), to prepare materials in advance (21%), and to refine teacher content knowledge (18%). Other minor opinions included the following: for administrative use (e.g., to show administrators or substitute teachers) (9%), to incorporate real-world connections (7%), for classroom management (5%), to improve future teaching (5%), to collaborate with other teachers (4%), to prepare questions/teacher statements (4%), and to develop instructional strategies (2%).

This finding points to the significance of discussing how a purpose or context of learning dictates design of learning with PSTs in methods courses. MTEs can benefit from sharing the various purposes of lesson planning with pre-service teachers and creating opportunities to conceptualize it as a design (Brown & Edelson, 2003) with purpose. For example, after completing the Phase 1 activity in the study the summary of results was shared with PSTs and several purposes were

questioned and revisited. Some PSTs questioned whether a real-world connection should be included in all lessons; in response, the instructor provided a lesson with a clear goal of connecting to real-life experiences and the class had a discussion on the intended outcome of such design. With regard to classroom management, some PSTs stated that thinking in advance about specific groupings and transitions between activities would be helpful.

2. Individual lesson plan critique (Phase 2)

Prior to this phase, PSTs briefly reviewed the MTPs stated in *Executive Summary of Principles to Actions* (NCTM, 2014b). Each PST provided an average of four comments using the MTP framework to identify strengths or provide suggestions to improve the lesson plan (see fig. 1).



[Fig. 1] Distribution of MTPs applied by PSTs to evaluate the lesson plan

MTP2, MTP3, and MTP4 were often used in identifying strengths. In their justifications, PSTs used evidence to support adherence to specific MTPs (e.g., the existence of hands-on tasks for MTP2, the apparent use of manipulatives and graphical representations for MTP3, and allowing students to discuss in small groups and whole groups for MTP4). When offering suggestions for improvement, MTP5 was most frequently mentioned due to the limited number of questions in the

sample lesson plan. MTP6 was least mentioned in both strengths and suggestions for improvement, which we suspect is because the PSTs only examined one lesson plan. If PSTs were able to examine multiple lessons or units and understand the full picture of content development, this MTP may have been identified more frequently.

MTP7 was the practice about which strengths and suggestions for improvement were equally mentioned. With the exception of two comments for suggestions, all other comments equated MTP7 with “helping struggling students.” Those who referred this practice as strengths indicated that “grouping a weak student with a strong student was a way to help the struggling students.” This interpretation is rather aligned with strategies to respond to student needs, which is not necessarily supported by MTP7 (NCTM, 2014a, p. 48).

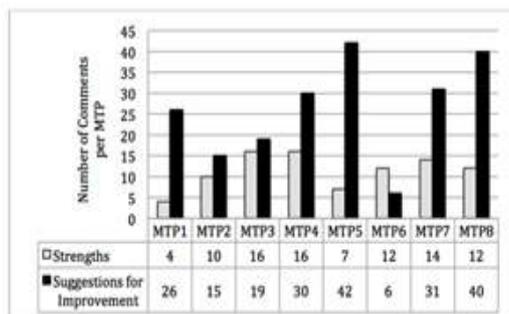
Overall, the findings imply that PSTs’ interpretations of MTPs were not clearly aligned with the ideas supported in *Principles to Actions*. For example, the word “struggle” was taken literally as PSTs perceived the word negatively. However, the superficial interpretations of MTPs are not surprising; after all, *Principles to Actions* was written for practicing teachers, whereas pre-service teachers need more time in the classroom to develop a robust understanding of the recommended practice. More importantly, the findings indicate that some MTPs may be more appropriate for lesson plans than other domains of teaching. In other words, some MTPs are actions for teachers (i.e., MTP4, MTP5), some are clearly aligned with planning (i.e., MTP1), some are more of a positioning or better aligned with authentic teacher practices (i.e., MTP7), and some are a combination of both (i.e., MTP2, MTP3, MTP6). This implies that critiquing a lesson plan as a planning document may be one-dimensional and not provide a clear

understanding about what actually happens in the classroom. Therefore, we believe that evaluating a lesson plan by the degree that MTPs are aligned is not appropriate. Rather, MTEs can challenge PSTs to incorporate one or two MTPs in a lesson plan and use the experience to bridge the gap between lesson planning and its implementation. Also, it would be more beneficial to PSTs if they had the opportunity to critique a live lesson or video of a lesson using the MTPs.

3. Collaborative lesson critique/modification (Phase 3)

After completing the Phase 2 activity, a summary of individual lesson plan critiques was shared with the PSTs. In the weeks preceding Phase 3, each MTP was clarified through the process of reviewing the “Teacher and Student Actions” sections in *Principles to Actions*. Each week a group of volunteer PSTs facilitated 15–20 minutes of discussion, where PSTs discussed teacher expectations and shared examples from their field experiences.

During Phase 3, groups of four to five PSTs were asked to collaboratively critique the same lesson and modify it based on the MTP framework. Each PST made an average of six comments. In addition, we note that the suggestions for improvement outnumbered the strengths, with the exception of MTP6 (see fig. 2).



[Fig. 2] Distribution of MTPs applied by PSTs to evaluate the lesson plan in collaborative lesson plan modifications

Some of the major themes noted in PSTs' suggestions in relation to specific MTPs include the following: (a) Addressing students' prior knowledge considering the bigger picture of mathematics learning progression (MTP1), (b) Adding more activities/resources, real-life connected tasks or an integrated approach (MTP2), (c) Providing various forms of representations that students can choose from and allow more time for students to make connections between different representations (MTP3), and (d) Preparing Prepare more specific questions (MTP5).

While more specific areas in need of improvement were identified in this phase, PSTs expressed their difficulties with developing alternative practices. For example, one PST stated, "I knew there had to be more purposeful questions added to the lesson plan, but I could not think of specific ones to add." PSTs also stated uncertainties about their previous assumptions on several other MTPs. For example, MTP4 (facilitate meaningful mathematical discourse) was well-received by PSTs in Phase 2 due to the teacher's use of the pair-share strategy and opportunity for students to talk. In Phase 3, several groups questioned how grouping strategies could lead to more effective discussion, focusing more on

the word "meaningful" than "discourse." This illustrates the PSTs' shift from focusing on the form to focusing on the function of MTPs.

MTP6 was still the least mentioned category. Although opinions were not fully discussed in this phase, they resurfaced in Phase 4 and led to the utilization of MTPs as interwoven entities rather than independent ones (e.g., in this case the close relationship between MTP6 and MTP3). For MTP7, the focus was still on the teacher's use of grouping strategies, where PSTs focused more on the productivity for all students rather than the assistance of struggling students. The PSTs also discussed that knowing students' potential misconceptions or prior knowledge would be critical in deciding the level of appropriate struggle for students. While the term 'differentiation' was frequently mentioned to suggest improvement, no specifics were mentioned. MTP8 was the practice that received the most suggestions in this phase, where PSTs suggested various ways to formally and informally assess students before, during, and after instruction. PSTs identified more specific strategies for MTP8 (e.g., using exit slips; informal monitoring during small group discussion) than any other MTP.

Overall, findings indicate that the PSTs' discussion moved from the existence of specific forms of elements in a lesson plan to the functions of those elements during this phase; however, there were still different interpretations of MTPs among PSTs that resulted in conflicting suggestions for modifications.

4. Post debriefing and reflective discussion (Phase 4)

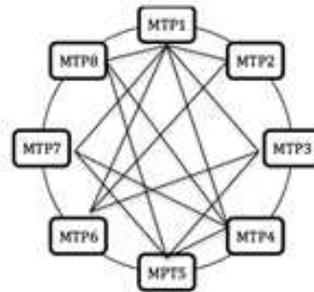
The debriefing and reflective discussion was conducted immediately following Phase 3. Small

group reflection sessions served as semi-structured focus group interviews and provided opportunities for PSTs to discuss and share their thoughts on any issues they discovered. These sessions aimed to examine discrepancies and to illuminate PSTs' understanding and interpretation of the MTPs. PSTs also responded to a questionnaire where they were asked to rate their level of confidence in understanding and utilizing each MTP, and to reflect on an open-ended question about the use of MTPs as an analytical lens.

(A) Part 1 (Continued discussion): Even though the first part of the session was intended to resolve the issues that appeared during the Phase 3 discussion, this debriefing session created more questions as the PSTs worked to identify the challenges they faced during Phases 2 and 3. Notably, PSTs reported difficulties in suggesting specific instructional moves. For example, the group that questioned the effectiveness of the balance model for equations as appropriate representations could not propose alternative representations. Other groups suggested different manipulatives (e.g., algebra tiles or Algeblocks®), but there were some PSTs who questioned the abstractness of the materials. These questions reflect the complexity of implementing MTP6 as a teaching practice or an evaluative criteria of instruction.

More importantly, PSTs began to discuss the interactions between MTPs rather than considering each separately. They highlighted that no single MTP can stand alone; likewise, no single part of the lesson plan can stand alone to produce a successful lesson. A group explained these interactions using the diagram below (see fig. 3). While PSTs attempted to theorize the interconnectedness among MTPs, they expressed the difficulties in synthesizing them in the actual lesson with an effective sequence of strategies or learning

activities.

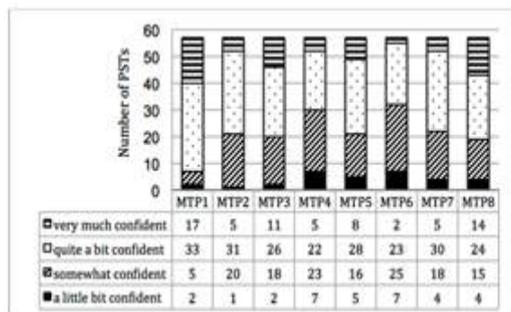


The Interactions of MTPs:

- *MTP1 should guide all others*
- *MTP3 plays a vital role in connecting conceptual understanding and procedural fluency (MTP6). To successfully use and connect representations, teachers should have clear goals (MTP1) and ask good questions (MTP5). Otherwise, use of representation may end up with the "do as I do" approach.*
- *MTP5 plays a critical role in accomplishing other MTPs. Without good questions, it is hard to facilitate meaningful discourse (MTP4), provide productive struggle (MTP7), elicit student thinking (MTP8), and so on.*
- *Teacher's facilitation of discourse (MTP4) is important when supporting productive struggle (MTP7) and eliciting student thinking (MTP8). It relies on teachers' purposeful questions (MTP5).*

[Fig. 3] A group's representation of interconnectedness among MTPs and a PowerPoint slide of PST narratives

(B) Part 2 (Self-confidence level): The PSTs' level of confidence in understanding and utilizing MTPs in the future was self-reported on a five-point scale (not at all confident, a little bit confident, somewhat confident, quite a bit confident, and very much confident). While no PST marked 'not at all confident' for an MTP, PSTs did express less confidence in MTP4 (facilitate meaningful mathematical discourse) and MTP6 (build procedural fluency from conceptual understanding), as shown in the following figure. As such, these two MTPs may need more opportunities to operationalize.



[Fig. 4] Distribution of PSTs' self-reported confidence level

(C) Part 3 (Reflection on the use of MTPs as analytical lens): The PSTs' reflections on the collaborative lesson planning process demonstrated various aspects of their understanding. The MTP framework served as an educational support for the majority of PSTs, serving as a lens through which PSTs could think critically about lesson planning relative to teaching practices. The following excerpts support this idea:

When I did a lesson plan critique in another method class, I feel that I was just pointing out silly mistakes and things that I feel I would do differently. Whereas this time, I was actually referring back to the 8 practices and using that to critique the lesson.

At first, the MTPs sounded like the same old cliché we have been told a lot in our education program. But once we went through them, I realize that incorporating them in the actual teaching is not an easy task. It was challenging, but helpful.

Despite this, some PSTs viewed MTPs as compartmentalized techniques and expressed that the eight MTPs limited classroom teaching practice. One PST stated, "It held me back. There were times where I would have changed something that didn't

adhere to any of the eight MTPs." Additionally, some PSTs were concerned about the need for modified strategies, as shown in this following statement: "I thought that the lesson was already pretty well written. I am worried if our modifications could confuse students."

V. Implications for Teacher Educators

The course activity reported here aims to support PSTs' pedagogical design capacity as they read, interpret, and adapt existing curriculum material using the eight MTPs as scaffolds. The responses from PSTs in Phase 1 confirmed that they bring a variety of pre-conceptions about lesson planning into the methods course. With the introduction to MTPs as an analytical framework in Phase 2, we found that PSTs could interpret the MTPs quite differently from what was intended in *Principles to Actions* (e.g., interpreting MTP7 for only helping struggling students).

The intervention of using the eight MTPs as a tool for critiquing existing lesson plans created opportunities for PSTs to share their various interpretations of MTPs and reflect on the functions of lesson planning in classroom teaching as a space for redesigning learning experiences. As PSTs moved through Phases 2, 3 and 4, they focused less on the superficial, compartmentalized features of a lesson plan (Lloyd & Behm, 2005; Nicol & Crespo, 2006) and more on the ways a lesson plan connects with recommended effective practices (Drake, Land, & Tyminski, 2014; Remillard, Herbel-Eisenmann, & Lloyd, 2011).

This study used MTPs from *Principles to Actions* as a relatively new framework to analyze a lesson plan, finding that some MTPs are more appropriate than others to manifest in a lesson plan as evidence of effective instruction. Since there are

other frameworks such as the Thinking Through a Lesson Protocol (Smith, Bill, & Hughes, 2008) that are explicitly designed for lesson planning, a comparative study investigating the degree of interconnectedness (or lack thereof) between lesson planning and teaching practice in the field (Rim & Choi, 2012; Jeong, 2009; Remillard, Herbel-Eisenmann, & Lloyd, 2011) is recommended. This line of work has the potential to inform MTEs as they prioritize important knowledge and skills for PSTs and practicing teachers, respectively, due to the developmental nature of learning to teach.

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수업설계와 예비교사의 학습: 수학교수관행을 분석틀로 사용한 예비교사의 수업지도안 검토 활동이 어떤 도움이 되는지에 관한 고찰

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본고는 미국수학교사협회(NCTM)의 대표적 최신 출판물인 *원리에서 실천으로(Principles to Actions)*에 제시된 8개 항목의 수학교수관행(Mathematics Teaching Practices: MTPs)을 분석의 틀로 이용하여, 초중등 예비교사들이 수업지도안 수정활동에 참여한 과정을 보고하고 있다. 이 과제는 주어진 수업지도안을 분석하고 수정하는 활동을 포함한 4단계의 과정으로 구성되었다. 57명의 예비교사들이 한 학기 간에 걸쳐 이 과제에 참여하였으며, 각 단계에서 수집된 자료는 귀납적 내용분석을 하였다. 예비교사들의 수업지도안 작성에 대한 초기개념은 수업관행(가령 MTPs)을 미약하게 반영하고 있었으며, 지도안 구성요소들의 기능보다는 형식을 더 강조하는 경향을 보였다. 그러나 MTPs를 수업지도안 분석의 틀로 이용하는 기회가 주어졌을 때, 예비교사들이 MTPs에 대한 다양한 해석을 보여주었고, MTPs를 수업지도안에 포함시키려는 노력을 하였으며, MTPs 간의 상호연계성에 더 주목하는 경향을 보였다. 본고는 이 수업지도안 수정과정에서 예비교사들이 겪은 도전 및 갈등도 제시하고 있다. 이런 점에서 본 연구 결과는 교사교육 프로그램에서 MTPs의 효과적 사용 가능성 여부를 조사하는 연구에 시사점을 제시하고 있다.

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