



Factors Affecting Palestinian Teachers' Ability to Reflect on Their Practice within Three Suggested Video-Enhanced Reflection Training Programs: Quasi-Experimental Research

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Abstract

Objectives: This study aims to investigate the factors that affect teachers' ability to reflect on their practice.

Methods: In this study, a quasi-experiential design was used to compare three types of video-enhanced reflection programs: individual reflection, collaborative reflection in peer, and collaborative reflection in a group. A total of 106 science teachers were randomly assigned to these three groups. A four-point scale was used to assess three reflection assignments for each group for data collection.

Results: The results showed that participating in the video-enhanced reflection group allowed teachers to write better reflections compared to participating in the video-enhanced individual or peer groups. This research revealed that teaching experience has a negative impact on teachers' ability to reflect on their practice. Furthermore, it found no significant difference between male and female teachers in their ability to reflect on their practice.

Conclusions: The findings of this study support the notion that it is easier to convince younger teachers to use critical reflection in their practice, while older teachers may require additional training to embrace the values of critical reflection. Utilizing a heterogeneous group of teachers could be an effective method to help teachers learn and adopt critical reflection.

Keywords: Video, reflection, teacher development program.

العوامل المؤثرة في قدرة معلمي العلوم على كتابة تأمل ذاتي لممارساتهم المهنية ضمن ثلاث برامج تدريبية مقترحة لدمج الفيديو في التأمل الذاتي: دراسة شبه تجريبية

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ملخص

الأهداف: هدفت الدراسة الحالية إلى استقصاء العوامل المؤثرة في قدرة معلمي العلوم على كتابة تأمل ذاتي لممارساتهم المهنية ضمن ثلاثة برامج مقترحة لدمج الفيديو في التأمل الذاتي. هذه البرامج التي تدمج الفيديو هي: برنامج تأمل ذاتي فردي، برنامج تأمل ذاتي ثنائي، وبرنامج تأمل ذاتي جماعي.

المنهجية: استخدم الباحث المنهج شبه التجريبي في تصميم البحث وجمع البيانات من 106 معلم ومعلمة، تم توزيعهم بشكل عشوائي على مجموعات الدراسة الثلاث. تم جمع بيانات الدراسة من خلال تقييم 3 كتابات تأملية وظفت الفيديو قام بكتابتها كل مشارك ضمن المجموعات الثلاث. استخدم الباحث مقياس رباعي لتقييم الكتابات التأملية الثلاث بعد التأكد من صدق وثبات هذه الأداة.

النتائج: أشارت نتائج الدراسة إلى أن المشاركين في مجموعة التأمل الذاتي الجماعي كتبوا تأملات ذاتية مهنية أفضل من المشاركين في مجموعة التأمل الذاتي الفردي ومجموعة التأمل الذاتي الثنائي. وأنه لا يوجد فروق دالة إحصائية بين أفراد مجموعتي التأمل الفردي والثنائي في مقدرتهم على كتابة التأمل الذاتي الخاص بممارساتهم المهنية. بينت نتائج الدراسة أيضاً أن تأثير سنوات الخبرة في التدريس كان سلبياً في قدرة المعلمين على كتابة التأمل الذاتي الخاص بممارساتهم المهنية في حين لا يوجد أثر للجنس في قدرة المعلمين على كتابة التأمل الذاتي المهني.

الخلاصة: أشارت نتائج الدراسة الحالية إلى سهولة اقناع المعلمين الجدد بممارسة التأمل الذاتي مقارنة بالمعلمين الأكبر سناً، كما أشارت أيضاً إلى إمكانية توظيف المجموعات غير المتجانسة من المعلمين في البرامج التدريبية التي تهدف لتطوير مهارات التأمل الذاتي لديهم.

الكلمات الدالة: الفيديو، التأمل الذاتي، برامج إعداد المعلمين.

Introduction

Designing, developing, and implementing teachers' preparation programs is challenging process since it aims to improve teachers' knowledge, skills, and attitudes (Korthagen & Vasalos, 2005). Furthermore, these programs should match schools' cultures and contexts and provide individual support to help teachers translate theory to practice (Tan, Tan, & Wettasinghe, 2011). Recently, there has been intensive efforts among higher education institutions to integrate critical thinking in teachers' preparation programs. However, educational research indicates that teachers still not able to integrate critical thinking appropriately to their daily practice (Choy & Cheah, 2009; Rudd, 2007; Black, 2005).

The literature emphasized the following features of an effective teachers' development programs: First, teacher development programs should emphasize teachers own development goals (Nelson & Slavit, 2008). Second, they should provide teachers with opportunities to understand and reflect on their own practice in an active learning environment (Ballantyne, Sanderman, & Levy, 2008). Third, they should support teachers to explore content, pedagogy, and new approaches (DuFour, Eaker, & DuFour, 2005). Fourth, they should provide opportunities for teachers to apply new strategies in their own classroom contexts (Borko, 2004). Finally, they should support cooperative participation of peers and colleagues to form communities of practice (Vescio, Ross, & Adams, 2008). These communities support their members to share passion and learn how to improve practice through different forms of reflection. Reflection is necessary for teachers to transfer learning across new and real contexts (Bransford, Brown & Cocking 2000).

Critical reflection helps individuals learn effectively by assessing their own previous knowledge, learning process, and desired objectives (Sezer, 2008). It gives them an opportunity to step back and choose best practices and strategies to achieve required goals (Rudd, 2007). Thus, critical reflection is among the most important features of an effective pre-service and in-service teachers' development programs especially when these programs aims to develop communities of practice.

Theoretical framework

This study is guided by Community of Practice Model. Lave and Wenger 1991 created this term to explain sharing knowledge and experience within community. This model uses social constructivism principles. Social constructivism found to be effective in teachers' professional development (Vescio, Ross, & Adams, 2008). Several educational researches document effective use of communities of practice to enhance teachers' knowledge, skills, and attitudes (Babinski et al., 2001; Chen, Chen, & Tsai, 2009; and Hur & Brush, 2009). The following section outlines professional development through collaborative inquiry learning as well as Video use to enhance collaborative reflection.

Professional development through collaborative inquiry

Collaborative inquiry of teaching is a four phases process that promotes an ongoing discourse about classroom practice. Coburn and Stein (2010) summarized these phases as follows: 1) *planning*, teacher recognizes his needs, determines his professional development objectives, and plan for experimenting new methods and strategies. 2) *acting*, teacher implements new methods and evaluates outcomes. 3) *sharing*, colleagues watch, document, and share evidence of classroom activities and students learning. 3) *reflection*, during this final phase, colleagues (community of practice) cooperatively reflect on students and teacher learning in the classroom context. This allow teachers to share ideas, receive feedback, and see their practice from different lenses.

Video-enhanced reflection

Several studies used Video as a medium to provide teachers with required classroom contexts to reflect on (Penny & Coe, 2004; Van Es & Sherin, 2010). This because Video provides teachers with unique opportunity to document and observe their classroom contexts. Teachers can pause, mark, rewind, and replay any critical situation in their classroom practice (Calandra, Brantley-Dias, Lee, & Fox, 2009; Snoeyink, 2010). Video can provide teachers with opportunities to deeply observe all elements and events that occur in the classroom (Zhang, Lundberg & Eberhardt, 2010). For example, teachers who used Video wrote more evidence based and pedagogy driven reflection when compared with teachers who did not use Video (Bryan & Recesso, 2006; Calandra, Brantley-Dias, Lee, & Fox, 2009). Other studies found that Video was beneficial for teachers to recognize their teaching habits (body language, voice, facial expressions, and repetitive

words) which can improve teachers' self-awareness to make conscious decision to change their practice (Coffey, 2014).

Assessment of reflection

Larrivee (2008) developed a tool to assess teachers' ability to reflect on their practice. This tool categorizes reflection in 4 hierarchical levels: 1) *pre-reflection*, teachers interpret and document classroom activities with no consideration of the context; 2) *surface reflection*, teachers start consider contexts and strategies to achieve planned objectives; 3) *pedagogical reflection*, teachers start consider context and how to improve their practice to achieve students' learning; and 4) *critical reflection*, teachers conduct ongoing critical inquiry depending on their educational ideology and philosophy.

Literature review

Körkkö, Morales & Kyrö-Ämmälä (2019) investigated pre-service teachers' perception and experience when using video application during practicum period. 12 pre-service teachers and 9 supervisors participated in this study. Focus groups, interviews and video diaries were used for data collection. Content and phenomenographic analyses were applied to present the results. The results revealed that pre-service teachers felt that the video app supported their self-reflection effectively. The influence on pre-service teachers' professional development may have been limited by factors including lack of guidance for individual and collaborative reflection. Using the video app as a supervisory tool was regarded as challenging in some ways.

Coffey (2014) examined video use to enhance reflective practice development in a cohort of Graduate Diploma of Education. A case study methodology was applied to collect data from 95 pre-service teachers participated in a training unit that used video for reflection. A questionnaire was used for data collection. The results revealed that using video to enhance reflection was beneficial, motivating, and simple.

Blomberg, Sherin, Renkl, et al. (2014) compared the effect of two video-based university courses on pre-service teachers' ability to reflect on their practice. One course applied a cognitive instructional strategy and the other course applied a situated strategy. Learning journals of 28 pre-service teachers were used for data collection. The results revealed that the two strategies have distinct impacts on the kinds of reflection patterns that are fostered.

Al Jabber (2013) examined the reflective teaching tools effectiveness in solving classroom management problems for Science pre-service teachers. Quasi-experimental approach was used with One Group Pretest Posttest design for data collection. 19 pre-service teachers participated in this study. Qualitative data was collected depending on open-ended questions. The results showed positive impact of reflective teaching tools in solving classroom management problems.

Statement of the Problem

Although previous studies showed that Video was beneficial in enchaining teachers' reflective writing. These studies integrated Video differently. For example, some studies reported individual use of video for reflection while other studies applied collaborative methods in peer and groups. These studies also applied different methods and frameworks for teachers' reflection. Comparing between different methods of video-enhanced reflection can help educators make more informed decision in designing, developing, and implementing teachers' development programs.

In Palestine, most professional development programs use cognitive training approach. During these training sessions, educators provide teachers with necessary information to improve their practice. Lately, Ministry of Education started using Portfolio to help teachers reflect on practice. However, teachers use Portfolio independently and rarely receive coaching or feedback during an implementation phase.

Aim and Questions of the Study

This research aims to promote reflection culture among Palestinian teachers. This is not only to enhance teachers' professional development but also to encourage utilization of collaborative inquiry in the Palestinian context. The purpose of this study is to investigate the factors that could affect teachers' ability to reflect on their practice, and compare between three types of video-enhanced reflection: individual reflection, collaborative reflection in peer, and collaborative reflection

in group. More specifically, this research tends to answer the following research questions:

Q1. Is there a significant difference in the reflection level of teachers who participated in the three types of training groups: individual reflection, inquiry reflection in peer, and inquiry reflection in group?

Q2. Is there a significant interaction effect of training group and teaching experience on teachers' ability to reflect on their practice?

Q3. Is there a significant interaction effect of training group and gender on teachers' ability to reflect on their practice?

Methodology

This study used quasi experimental design to investigate teachers' ability to reflect on their classroom practice during an on-service teachers' certificate program. Post-test design was used for data collection from three experimental groups. The participants were randomly assigned in three types of video-enhanced learning circles: video-enhanced individual reflection, video-enhanced collaborative reflection in peer, and video-enhanced collaborative reflection in group.

The program consisted of the following training modules: nature of science, science misconceptions, science literacy and communication, science curriculum, science teaching strategies, student as scientist, and authentic assessment in science education. The training sessions was conducted in three phases. First, six hours face-to-face training sessions was conducted weekly to help teachers understand the education content of each module. The training session ended with a classroom assignment where teachers need to apply the gained skills in a classroom context and document this activity by Video. Second, a three hours learning circle was also managed weekly. This circle designed to helps teachers discuss their classroom practice deeply and receive feedback. Three types of video-enhanced learning circles were applied: video-enhanced individual reflection, video-enhanced collaborative reflection in peer, and video-enhanced collaborative reflection in group. Finally, the participants were directed to document this reflection in the Portfolio.

Participants

The participants were 106 on-service science teachers who teach 1-4 grades at four different directorates of education in Palestine. They were participating in a teaching certificate program at Hebron University during the year 2017-2018. The participants were randomly assigned to three experimental groups with the following demographic characteristics.

Table 1. Demographic characteristics of the three experimental groups

<i>Video-Enhanced Group</i>	<i>Number</i>	<i>Gender</i>		<i>Teaching Experience</i>		
		Male	Female	1-7 Years	7-14 Years	Above 15 Years
Individual reflection	36	18	18	15	13	8
Inquiry reflection in peer	35	16	19	10	20	5
Inquiry reflection in group	35	18	17	13	14	8

Instruments

Three portfolio reflection assignments were scored for each group for data collection. Larrivee (2008) four points scale was used by the researcher to assess the participants' ability to reflect on their classroom practice. Validity of the four points scale was verified through distributing it to a panel of referees that consisted of 5 university professors specialized in Curriculum and Instruction. Reliability of the instrument was verified by applying it to a pilot sample of (10) participants. Crombach alpha equation was calculated to verify internal consistency for the four points scale; it scored (0.81) which is accepted for the purposes of this study (Streiner, 2003).

RESULTS

Q1 Results

Is there a significant difference in the reflection level of teachers who participated in the three types of training groups: individual reflection, inquiry reflection in peer, and inquiry reflection in group?

One Way Analysis of Variance ANOVA was used to assess whether a significant difference in reflection ability exist

between the three video-enhanced groups: individual reflection, inquiry reflection in peer, and inquiry reflection in group. The results are presented in Table 2.

Table 2. ANOVA test results comparing the three experimental groups on their ability to reflect on their practice

	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Between Groups	3.374	2	1.687	6.121	.003
Within Groups	28.388	103	.276		
Total	31.762	105			

Table 2 shows that a significant difference exist between the three video-enhanced groups, $F = 6.121$; $p < 0.05$. Post hoc comparisons using Tukey HSD test was conducted to compare group means as seen in Table 3.

Table 3. ANOVA comparisons of reflection ability for the three experimental groups

<i>Video-enhanced group</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	Tukey's HSD Comparisons		
				<i>Individual reflection</i>	<i>Inquiry reflection in peer</i>	<i>Inquiry reflection in group</i>
Individual reflection	36	2.13	.582	-	-	*
Inquiry reflection in peer	35	2.40	.490	-	-	-
Inquiry reflection in group	35	2.57	.495	*	-	

*Significant difference exist at .05 level

Table 3 indicated that the mean score for the video-enhanced inquiry reflection in group ($M = 2.57$, $SD = .495$) was significantly different than the video-enhanced individual reflection ($M = 2.13$, $SD = .582$). However, the mean score of the video-enhanced inquiry reflection in peer ($M = 2.40$, $SD = .490$) did not significantly differ from the video-enhanced individual reflection or the video-enhanced inquiry reflection in group. Therefore, it can be seen that the video-enhanced individual reflection was associated with the smallest mean level of reflection $M=2.13$, and the video-enhanced inquiry reflection in group was associated with the highest mean level of reflection $M=2.57$.

Q2 Results

Q2. Is there a significant interaction effect of training group and teaching experience on teachers' ability to reflect on their practice?

Univariate Analysis of Variance was performed to explore the interaction effect of training group and teaching experience on teachers' ability to reflect on their practice as seen in table 4.

Table 4. Tests of Between-Subjects Effects

<i>Source</i>	<i>Type III Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Corrected Model	11.205 ^a	8	1.401	6.609	.000
Intercept	377.612	1	377.612	1781.834	.000
Training Group	4.084	2	2.042	9.636	.000
Teaching Experience	7.162	2	3.581	16.897	.000
Training Group * Teaching Experience	.123	4	.031	.145	.965
Error	20.557	97	.212		
Total	626.111	106			
Corrected Total	31.762	105			
a. R Squared = .353 (Adjusted R Squared = .299)					

Table 4 showed that the interaction effect between training group and Teaching experience on teachers' ability to reflect on their practice was not statistically significant $F = .145$; $P > 0.05$. This table also showed that there was a statistically significant effect of teaching experience on teachers' ability to reflect on their practice $F = 16.897$; $P < .05$.

Post hoc comparisons using Tukey HSD test was conducted to compare teachers' ability to reflect on their practice depending on their experience as seen in Table 5.

Table 5. ANOVA comparisons of reflection scores for the three experience groups

				Tukey's HSD Comparisons		
<i>Experience</i>	<i>N</i>	<i>Mean</i>	<i>SD</i>	<i>1-7 Years</i>	<i>8-14 Years</i>	<i>More than 15 Years</i>
1-7 Years	42	2.57	.478	-	-	-
8-14 Years	48	2.35	.520	*	-	-
More than 15 Years	16	1.87	.514	*	*	-
*Significant difference exist at .05 level						

Table 5 indicated that the mean score for the low experience group (1-7 Years) $M = 2.57$, $SD = .478$ was significantly different from the mean score of the medium experience group (8-14 Years) $M = 2.35$, $SD = .520$, and the mean score of the high experience group (more than 15 Years) $M = 1.87$, $SD = .514$. It also indicated that the mean score for the medium experience group (8-14 Years) $M = 2.35$, $SD = .520$ was significantly different from the mean score of the high experience group (more than 15 years) $M = 1.87$, $SD = .514$. Therefore, it can be seen that the high ability to reflect on practice ($M = 2.57$, $SD = .478$) was associated with the low teaching experience group (1-7 Years), and the low ability to reflect on practice $M = 1.87$, $SD = .478$ was associated with high teaching experience group (more than 15 years).

Q3 Results

Q3. Is there a significant interaction effect of training group and gender on teachers' ability to reflect on their practice?

Univariate Analysis of Variance was performed to explore the interaction effect of training group and gender on teachers' ability to reflect on their practice as seen in table 6.

Table 6. Tests of Between-Subjects Effects

<i>Source</i>	<i>Type III Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Corrected Model	4.441a	5	.888	3.251	.009
Intercept	593.534	1	593.534	2172.422	.000
Training group	3.423	2	1.712	6.265	.003
Gender	.252	1	.252	.921	.340
Training group * Gender	.827	2	.413	1.513	.225
Error	27.321	100	.273		
Total	626.111	106			
Corrected Total	31.762	105			
a. R Squared = .140 (Adjusted R Squared = .097)					

Table 6 showed that the interaction effect between training group and gender on teachers' ability to reflect on their practice was not statistically significant $F = 1.513$; $P > 0.05$. This table also showed that there was no statistically significant effect of gender on teachers' ability to reflect on their practice $F = .921$; $P > 0.05$.

Discussion

This study found that video-enhanced critical reflection in group was more effective than video-enhanced individual reflection to enhance teachers' ability to reflect on their practice. It also showed no difference between video-enhanced

critical reflection in peer and the other two video-enhanced groups (individual and group reflection). Reflection is a challenged practice; sometimes it is hard for the teacher to analyze his performance independently. Independent teacher can't identify all areas of weakness or strength in his practice and suggest best methods of improvement. As (Körkkö, Morales & Kyrö-Ämmälä, 2019) found guidance is deemed necessary for writing individual and collaborative reflection.

Group discussion can bring different perspectives, experiences, and skills that help teachers brainstorm possible solutions and document better reflection. For example, Jindal-Snape & Holmes (2009) identified conversation as beneficial method to improve reflective practice. Especially, when conversation leads to exchange reflective ideas between the community of practice members. Annetta (2011) found that group discussion under supervision can enhance confidence, persuaded learning, and encourage improvements. Bush & Bissell (2008) also found that group discussions have positive impact in improving Portfolios reflective writing. This finding was also supported by Al Jabber (2013) who found positive impact of reflective teaching tools in solving classroom management problems.

The findings of this study suggested that the high ability to reflect on practice was associated with the low teaching experience group. It seems that teachers show critical reflection gain during their first few years of profession. After that, their critical reflection performance tends to level off. Recent in-service and pre-service training courses and educational content might help less experienced teachers show more tendency and potential for doing reflective practice (Khoshshima, Shirnejad, Farokhipour, & Rezaei, 2016). Literature review document disagreement results for the relationship between teaching experience and teachers' ability to practice critical reflection. Ansarian, Farrokhi, & Rahmani (2015) found significant positive relationship between teaching experience and teachers' ability to practice reflective teaching. Otherwise, Ghaslani (2015) found no significant effect of teachers' gender and experience on their ability to practice critical reflection. This study found no significant difference between male and female teachers on their ability to reflect on their practice. This finding is not consistent with previous studies which showed that female teachers are usually more reflective than their male colleagues (Poyraz & Usta, 2013; Rashidi & Javidanmehr, 2012).

To sum up, the results of this study showed that participating in video-enhanced reflection group allowed teachers to write better reflection than participating in video-enhanced individual or peer groups. This research showed that teaching experience has negative impact on teachers' ability to reflect on their practice. It also found no significant difference between male and female teachers on their ability to reflect on practice.

The findings of this research could help policymakers make better decisions regarding implementation of critical reflection in schools. This study found that participating in a video-enhanced reflection group helped teachers write better reflection. It also showed that teaching experience influenced critical performance negatively. Therefore, it is easier to convince younger teachers to use critical reflection in their practice; older teachers would require extra training to convince them of the values of critical reflection. Thus, using heterogynous group of teachers could be effective method to help teachers learn and adopt critical reflection. This study was a first step towards understanding the variables that affect teachers' ability to reflect on their practice. As critical reflection becomes more common, more research is required to identify how the critical reflection process could be strategically integrated into classroom contexts. The participants in this study are Palestinian teachers. Replicate studies with data collected from other institutions, regions, or countries regarding reflective practice can further confirm the variables that predict teachers' success and give policymakers a clear insight into reflective practice in their countries or school districts.

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