



Pedagogical Beliefs about Critical Thinking among Indonesian Mathematics Pre-service Teachers

Kusaeri

Dr., Universitas Islam Negeri Sunan Ampel Surabaya, Indonesia, kusaeri@uinsby.ac.id

Anindito Aditomo

Dr., Humboldt Postdoctoral Fellow, DIPF Germany, and University of Surabaya, Indonesia, aditomo@staff.ubaya.ac.id

This study aims to (1) measure pre-service teachers' pedagogical belief in the value of teaching Critical Thinking (CT), their preparedness to teach CT, and their preference toward constructivist teaching approaches to develop students' CT skills; and (2) explore the potential links between these pedagogical beliefs and aspects of teacher education experience. Participants were 223 mathematics pre-service teachers from 3 teacher education institutions in East Java, Indonesia. Beliefs about the value of teaching CT and perceived readiness to teach CT were measured using Likert-type scales, while preference towards constructivist instruction was assessed using vignettes depicting teaching dilemmas. Participants believed that some CT skills (thinking independently and logical communication) were important, but CT dispositions were not. About 60% believed they are prepared to teach CT and generally preferred constructivist over traditional instruction. Most aspects of the pre-service education were not associated with pedagogical beliefs about CT disposition, perceived preparedness, or preference for constructivist instruction, while some were only weakly associated with belief about teaching CT skills. These highlight the need for mathematics teacher educators to give more emphasis on the importance of CT, especially its dispositional dimensions, and the role of constructivist instruction in developing CT.

Keywords: critical thinking, pedagogical beliefs, mathematics education, pre-service teachers, thinking disposition

INTRODUCTION

Improving the quality of mathematics teaching is a strategic issue which focuses on curriculum reform across the globe in the last three decades (Fung et al., 2017; Lee et

Citation: Kusaeri, & Aditomo, A. (2019). Pedagogical Beliefs about Critical Thinking among Indonesian Mathematics Pre-service Teachers. *International Journal of Instruction*, 12(1), 573-590.

al., 2017; Lui & Bonner, 2016; Sembiring et al., 2008). This reform is directed at how mathematical teaching and learning can challenge and develop students' thinking skills (Zohar & Schwartz, 2005). This issue has been discussed for decades as it can be traced back in 1938, when Dewey highlighted the importance of teaching and learning that emphasizes the development of students' thinking (Ab Kadir, 2015). It can be realized using a critical thinking.

Critical thinking re-emerges as a component to prepare the 21st century generations to survive with the changing era (Berliner, 2009). A number of studies (As'ari et al., 2017; Innabi & El Sheikh, 2007; Staples & Truxaw, 2012) conclude that mathematics has a potential role in developing critical thinking skills. In this regard, mathematics teachers have a strategic role to help their students to develop their critical thinking skills. Teachers must be able to give students opportunities to understand the concepts and make justifications in their mathematics learning, not a learning that merely trains students to apply the formula and mathematical procedures.

Teaching and learning that only emphasize the application of mathematics formulas and procedures can lead to students' weak reasoning and logic. As a reflection, international surveys such as PISA (Program for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study) always show that Indonesian students' mathematics achievement is always below those from other developing countries (Oktiningrum & Hartono, 2016). Since joining PISA in 2000 up to 2015, Indonesian students are always in the low rank in terms of their mathematics achievement. In the TIMSS survey, Indonesian students' mathematics achievement is also alarming (Lailiyah et al., 2018). One of the contributing factors to the low PISA and TIMSS results is that students are not accustomed to solving mathematics problems that demand critical thinking skills (Nursyahidah & Albab, 2017).

The studies conducted by Sembiring et al. (2008) and Dewantara et al. (2015) found that teachers often provide students with mathematics problems that mostly require students to apply formulas, procedures or algorithms. In their interaction with students, teachers also commonly start with questions that focus only on formulas that require students to respond shortly. This condition, according to Hallman-Thrasher (2017) may fail to encourage students to reason and construct arguments. They will be confused when confronted with the typical mathematics problems in PISA and TIMSS that require high reasoning and involve all levels of thinking from Bloom's taxonomy to solve.

Changing the existing mindset of the mathematics teachers to become a critical thinker is not unproblematic. Various studies have tried to provide intervention programs to facilitate mathematics teachers to change their mindset and become critical thinkers (Hammerness et al., 2005; Richardson & Placier, 2001). However, the programs seem to bring no significant influence and the result is contrary to the expectation. Such a non-performance may be caused by the teachers' beliefs. Grootenboer (2008) states that teachers' mindset is closely related to their beliefs. The beliefs are established, difficult to change and can influence the teacher's views in teaching mathematics (Cooney, 2001). Hence, training the pre-service teachers to be critical thinkers can be the right choice rather than providing intervention programs for the in-service teachers

(Prahmana et al., 2012). In this context, it is important to explore pre-service teachers' beliefs as one of the significant aspects of teacher candidates.

The beliefs of a pre-service teacher relate to her or his knowledge and will filter out all the new information so as to shape the mindset (Lui & Bonner, 2016). Pre-service teachers who have high confidence tend to claim that the cause of students' failure in solving mathematics problems is lack of effort. On the contrary, pre-service teachers with the same ability but have a lower confidence commonly assume that the failure results from the lack of students' ability. This mindset, according to Skilling et al. (2016), will influence the teachers' ways in assisting and motivating to their students and affects the students' learning outcomes.

The pre-service teachers' beliefs are also closely related to their learning experience (Hong & Chai, 2017). If they were exposed to conventional learning approach during their teacher training, they will tend to develop conventional-learning-oriented beliefs. They tend to believe that students learn better through a detailed process of explanation, comprehensive, and correct information related to mathematical formulas/procedures. Conversely, those who experience discovery learning will build a more constructivist belief.

Pre-service teachers who view mathematics as memorization of facts, procedures and rules, will also encourage the pre-service teachers to emphasize solely on applying the formula, not on conceptual understanding in their teaching later (Beswick, 2005). On the contrary, when the pre-service teachers view mathematics as a process of exploration and problem solving, they will later tend to assist students to explore and construct their understanding of mathematics problems (Hong & Chai, 2017).

There is an indication that the teachers' beliefs can in many ways influence their teaching later. For example, when they choose or decide which teaching method to use such a method will become their preferred way of teaching (Adnan & Zakaria, 2010). Thus, understanding pre-service teachers' beliefs is critical in the context of mathematics learning in order to help develop and implement effective mathematics teacher education programs (Barlow & Reddish, 2006).

There have been a number of studies related to the beliefs of mathematics pre-service teacher but only few that focus on areas of critical thinking learning. Studies conducted both inside and outside Indonesia have put emphasis on teachers' beliefs related to mathematics learning methods (Adnan & Zakaria, 2010; Didis et al., 2016; Hong & Chai, 2017; Kılıç, 2011; Lui & Bonner, 2016). Other studies focus on the impact of teaching methods on the improvement of critical thinking skills (Kurniati et al., 2015; Palinussa, 2013).

In Indonesian context, a research about mathematics pre-service teachers' critical thinking skills by As'ari et al. (2017) brings interesting results. The research shows that the mathematics pre-service teachers in majority are categorized into non-critical thinkers. This portrays that mathematics education in Indonesia has not successfully developed positive beliefs about mathematics learning that can instil critical thinking. What seems to be the flaw of this study is the sample aspect. This study, however, only

took limited number of sample, thus, the results may not reflect all aspects of pre-service teachers' beliefs on critical thinking. This signifies the need to look at other strategic aspects of pre-service mathematics teacher's beliefs about critical thinking skills.

Previous studies and theoretical underpinning outlined above signify the need to further explore mathematics pre-service teachers' critical thinking skills in more detail and comprehensive study. This study seeks to advance prior research on this topic in two ways. First, this study draws upon the psychological literature to define critical thinking as incorporating both a cognitive (knowledge/skills) component and an affective (dispositional) component (Abrami et al., 2015; Stanovich, 2016). In this view, knowing about and having the skills to analyse arguments, for example, is not sufficient to become a critical thinker. One must also be willing to enthusiastically and habitually apply such knowledge and skills to a variety of everyday situations. The implication for teacher education is that it is important for teachers to develop not only students' critical thinking skills, but also dispositions such as the enjoyment of effortful thinking and the willingness to revise one's prior beliefs/opinions in the face of evidence (Haran et al., 2013). This framework provides a more comprehensive assessment of pre-service teachers' beliefs about critical thinking. Second, more empirically, present study seeks to advance prior research by exploring the potential links between aspects of the teacher training experience with pre-service teachers' personal and pedagogical beliefs about critical thinking. Evidence about such links, or lack thereof, would have important practical implications for mathematics teacher education.

METHOD

A cross-sectional survey using self-report instruments was conducted to answer the research questions. This method was considered to be appropriate given the study's aim of assessing participants' background and beliefs.

Participants

Research participants were 223 mathematics pre-service teachers from 3 teacher education institutions in East Java, Indonesia. The research sites were chosen because they represent the most prominent teacher education institutions in the region. Participants were mostly female (88.6%), with an age range of 17 to 32 years (averaging 20.72 years). When the data were collected, 44.8% of the participants were beginning their 3rd semester of undergraduate study, 43.5% were in their final 6th to 9th semester of undergraduate study, while the remainder were in their first year of a master/graduate degree. They were recruited on a voluntary basis through personal contacts, resulting in a non-random sample. Random sampling was not performed due to practical constraints.

Instruments

Belief about the value of developing critical thinking was using a scale developed by the second author. The scale asked participants to rate the importance of 7 CT skills (e.g. the ability to present clear arguments) and 5 CT dispositions (e.g. willingness to revise one's opinion based on new evidence) as learning objectives in their future classrooms. The response scale ranged from 0 ("relatively unimportant") to 3 ("essential or very

important”). The 7 and 5 items were averaged to provide two separate value indices. Internal reliability was 0.63 for the CT skill value index (omitting one item) and 0.65 for the CT disposition value index. In addition, participants were also asked to rate the importance of non-CT related skills and dispositions, which are displayed in Table 2. To gauge the value placed on critical thinking in comparison to other potentially valued learning objectives, participants were asked to choose 3 skills and 3 dispositions (from the list of CT and non-CT related skills/dispositions) they consider to be top priorities in their own future classrooms.

To measure belief about preparedness to teach CT, participants were asked to answer “How sure are you that you are prepared to develop your students’ critical thinking in your future class?” on a scale from 0 (“extremely unprepared”) to 5 (“very sure that I’m prepared”). Because this was a single item measure, no reliability index was computed.

Preference towards constructivist instruction were assessed using 4 vignettes which depict a teaching dilemma. The vignettes were based on an assessment framework developed by Zohar & Schwartz (2005). Vignette A depicted the dilemma of covering the curriculum content vs. going deeper into selected topics, at the risk of neglecting other topics in the curriculum. Vignette B depicted the dilemma of encouraging students to obtain knowledge from teachers and textbooks, vs. encouraging independent exploration and sense making, at the risk of forming conclusions which do not conform to accepted knowledge. Vignette C was about the dilemma of having students learn only about “certain” and “proven” facts, vs. learning about complex problems and phenomena which do not easily lend themselves to clear, certain answers. Vignette D was about the dilemma of organising the classroom around individual work to emphasise structure and focused attention, vs. incorporating more collaborative and project-based work at the risk of having a “messy” or noisy class. A composite index of preference for constructivist teaching was not computed due to the low internal reliability of the four items.

Analysis

Descriptive statistics (proportions and means) of the relevant variables were computed to address RQ1 to RQ4. Addressing RQ5, cross tabulations and chi-square tests were performed to examine the associations between different aspects of participants’ pre-service education with their beliefs about teaching CT and preference for constructivist teaching. For the latter variable, analysis was conducted separately for each teaching dilemma vignette due to the low reliability of the composite index.

FINDINGS

Q1. The value of critical thinking skills and dispositions as learning objectives: On average, 21.4% of the study participants placed at least one critical thinking skill as either their first, second, or third priority of learning objectives (see Table 1). This is higher than the average of 15% who prioritised other (non-CT related) generic skills as learning objectives. Looking more closely at specific skills, three skills were most often endorsed as priority learning objectives. Two critical thinking skills were especially

popular as prioritised learning objectives: the ability to think independently and to communicate arguments clearly and logically. These are the two critical thinking skills which were endorsed more often than non-CT skills.

On the other hand, four critical thinking skills were relatively unpopular as learning objectives: the ability to comprehend implicit meaning in texts, to evaluate the credibility of information sources, to analyze evidence and claims, and to synthesize information before making decisions.

Table 1
The Value of CT and non-CT Skills

Generic skills (soft skills)	Priority 1	Priority 2	Priority 3	Priorities (1, 2 or 3)
Critical thinking skills (<i>average</i>)	6.9%	7.2%	7.2%	21.4%
Thinking independently	29.0%	10.9%	5.0%	44.8%
Reflecting on one's own thinking	6.3%	9.1%	14.0%	29.5%
Arguing clearly and logically	5.9%	16.8%	19.5%	42.2%
Synthesizing information before making decisions	2.3%	5.0%	5.4%	12.7%
Assessing the credibility of the source of information	2.3%	1.8%	2.3%	6.3%
Analyzing evidence and evaluating claims	1.4%	6.8%	3.2%	11.3%
Analyzing text/implicit meaning	1.4%	0%	1.4%	2.7%
Non-critical thinking skills (<i>average</i>)	5.2%	5.0%	4.9%	15.0%
Self-regulated learning	17.6%	7.7%	8.1%	33.5%
Collaboration/teamwork	11.8%	20.5%	9.5%	41.7%
Persuasive communication	5.9%	1.4%	3.6%	10.9%
Understanding of many facts/information	5.0%	5.9%	7.2%	18.1%
Foreign language proficiency	4.5%	4.1%	8.1%	16.8%
Competency in subject matters	2.7%	4.1%	3.2%	10.0%
Test-taking skills	0.9%	4.1%	7.2%	12.2%
Explaining social phenomena	0.9%	1.8%	1.8%	4.5%
Explaining natural phenomena	0%	0%	0%	0%

With regards to dispositions, on average only 12.8% of the participants endorsed at least one critical thinking disposition, in comparison to 39.3% who endorsed non-CT dispositions as their prioritised learning objective. Looking at the specific dispositions, three non-CT dispositions were especially popular as learning objectives, mentioned by around 50% or more of the participants as prioritised learning objectives. These were respect towards teachers and parents, religiosity, self-discipline. The two most popular CT-related dispositions, willingness to revise one's opinion and to think systematically and reflectively, were only mentioned as prioritised learning objectives by around 20% of the participants.

Table 2
The Value of CT and non-CT Dispositions

Dispositions/characters	Priority 1	Priority 2	Priority 3	Priorities (1, 2 or 3)
Critical thinking dispositions (<i>average</i>)	2.3%	4.7%	5.8%	12.8%
Enjoys thinking about abstract ideas	5.0%	2.7%	2.3%	10.0%
Willing to revise opinion	2.7%	7.7%	8.6%	19.0%
Preference for careful, reflective thinking	2.3%	7.7%	10.5%	20.4%
Seek and value evidence which contradict personal preference	1.4%	3.6%	6.4%	11.3%
Enjoys deep, effortful cognitive activities	0%	1.8%	1.4%	3.2%
Non-critical thinking dispositions (<i>average</i>)	14.8%	12.7%	11.8%	39.3%
Respect for teachers and parents	42.5%	20.8%	17.7%	81.1%
Being religious	23.1%	17.6%	8.6%	49.4%
Discipline and self-control	20.4%	20.8%	20.5%	61.6%
Perseverance	2.7%	14.5%	19.5%	36.7%
Obedience to authority and law	0%	1.4%	3.2%	4.5%

Q2. Perceived preparedness to teach for critical thinking: Almost 60% of the participants reported being either “sure” or “very sure” that they are ready to develop their students’ critical thinking in class.

Table 3
Pre-service Teachers’ Perceptions on Preparedness to Teach CT

Perceived preparedness	<i>F</i>	%
Extremely unprepared	0	0
Unprepared	6	2.9
Unsure whether prepared or not	80	39.0
Prepared	102	49.8
Very sure prepared	17	8.3
Total	205	100

Responses to the open-ended question reveal some of the reasons underlying the participants’ belief about their lack of preparedness. Some of these responses cited their limited knowledge about critical thinking and how to teach for it. Sometimes these responses mentioned specific skills like: “I have not had the opportunity to create test items to assess students’ higher order thinking” and “I don’t know how to write tasks which call for critical thinking.” Others cited their lack of practical teaching experience by writing statements such as “I have not yet implemented [critical thinking teaching] in a real class.”

Q3. Preference for constructivist teaching approaches: Between 57% to 67% of the participants were in favour of constructivist approaches in response to 3 of the 4 teaching dilemmas (see Table 4). However, only 14% preferred the constructivist approach in response to Dilemma C, which focuses on the certainty or uncertainty of knowledge as an object of learning.

Table 4
Teaching Dilemma and Preference for Teaching Approaches

Teaching Dilemma	Traditional Instruction		Constructivist Instruction	
	<i>f</i>	%	<i>f</i>	%
Coverage of curricular content (traditional) vs. going deep at the risk of neglecting some curricular content (constructivist).	90	41.5	127	58.5
Obtain knowledge from teachers/authorities (traditional) vs. independent exploration, at the risk of reaching wrong conclusions (constructivist).	92	42.6	124	57.4
Learning about "proven" facts/concepts (traditional) vs. learning about complex phenomena/problems without certain answers (constructivist).	180	85.3	31	14.7
Quiet and focused class with students working individually (traditional) vs. having students engage in argumentation and collaborations, at the risk of having a "messy" and "noisy" class (constructivist).	66	32.4	138	67.6

It is important to note that the low internal reliability of responses to these four dilemmas indicates that different facets of constructivist instruction evoke different preferences. In other words, preference for instructional approach seems to be fragmented and contextual. Pre-service teachers who endorse the use of argumentation and collaborative learning (Dilemma D), for example, may simultaneously give more emphasis to content coverage than in-depth understanding (Dilemma A), or vice-versa.

Q4. Exposure to critical thinking in pre-service training: Most participants have not attended seminars or workshops on critical thinking outside of the normal coursework (see Table 5). Most also have not read books or other materials about the topic. However, when asked about their coursework experience, most report that they have had at least one course which developed their critical thinking skills and pedagogical knowledge about teaching CT.

Table 5
Course Experience on CT Skills Development

No.	During the course of your pre-service education, have you ...	Answer	<i>f</i>	%
1.	attended seminars/workshop on critical thinking as part of your pre-service teacher education?	No	145	65.9
		Yes	75	34.1
2.	attended seminars/workshop on critical thinking which is beyond/external to your pre-service teacher education?	No	205	95.8
		Yes	9	4.2
3.	read articles or books about critical thinking?	No	135	63.1
		Yes	79	36.9
4.	taken any coursework (as part of your pre-service education program) which develops your own critical thinking?	No	17	8.0
		Unsure	19	8.9
		Yes	177	83.1
5.	taken any coursework (as part of your pre-service education program) which develops your pedagogical knowledge to teach for critical thinking?	No	9	4.5
		Unsure	16	7.9
		Yes	177	87.6

Q5. Relationships between beliefs, course experience, and preference of teaching approaches:

The regression results indicate that aspects of the participants' pre-service education are mostly unrelated to their beliefs about CT and instructional preferences (see Table 6). When they were related, the associations were weak. More specifically, when belief about the value of teaching for CT skills was regressed on the pre-service experience variables, the overall model was significant ($R = 0.284$; $p=0.022$). Looking at the individual variables, only two were considered to be significant predictors: level of study and coursework which develop one's own CT.

With regards to beliefs about preparedness to teach for CT, the overall model was also significant ($R=0.328$; $p=0.003$). However, only one variable was considered to be significantly associated with this belief: experience with coursework which develops pedagogical knowledge. Meanwhile, the overall regression model for belief about the value of teaching for CT dispositions was non-significant ($R=0.210$; $p=0.244$).

Table 6

Result of Regression Analysis on the Relation among Beliefs, Course Experience, and Preference for Teaching Approaches

No.	Aspects of pre-service experience (predictor variables) (Constant)	Value of CT skills as learning objective		Value of CT dispositions as learning objective		Confidence in teaching for CT	
		B	sig.	B	sig.	B	sig.
		2.546	.000	2.678	.000	1.563	.000
1.	Level of study	.144	.011	.063	.222	.102	.215
2.	Attended CT seminars/workshop as part of pre-service education	-.051	.531	-.094	.200	.084	.477
3.	Attended CT seminars/workshop beyond pre-service education	.132	.456	-.101	.529	.176	.520
4.	Read articles or books about CT	-.045	.566	.093	.199	-.130	.255
5.	Coursework which develops your own CT	.081	.035	.052	.136	.067	.232
6.	Coursework which develops pedagogical knowledge to teach for CT	.049	.262	.009	.820	.210	.001

With regards to teaching preferences, chi-square tests indicate that three aspects of pre-service education were associated with greater preference for at least one aspect of constructivist teaching (see Table 7). First, pre-service teachers studying at the postgraduate level were more likely than undergraduate students to prefer constructivist approaches related to aiming for deeper understanding (Dilemma A) and independent exploration (Dilemma B). Second, pre-service teachers who reported of having read books or other materials on critical thinking were more likely to prefer constructivist teaching related to aiming for deeper understanding (Dilemma A). Third, those who reported of having attended at least one coursework which developed their critical thinking were also more likely to prefer constructivist teaching approaches related to Dilemmas A and B.

Table 7
Preference for Teaching Approaches

Aspects of Pre-service Education		Teaching Dilemma A		Teaching Dilemma B		Teaching Dilemma C		Teaching Dilemma D	
		<i>Trad.</i>	<i>Const.</i>	<i>Trad.</i>	<i>Const.</i>	<i>Trad.</i>	<i>Const.</i>	<i>Trad.</i>	<i>Const.</i>
1. Level of study	<i>Unerg. sophomores</i>	52.2%	38.6%	54.3%	37.1%	43.9%	54.8%	43.9%	46.4%
	<i>Unerg. Seniors</i>	42.2%	44.9%	38.0%	47.6%	46.1%	25.8%	43.9%	40.6%
	<i>Postgraduates</i>	5.6%	16.5%	7.6%	15.3%	10.0%	19.4%	12.1%	13.0%
2. Attended CT seminars /workshop as part of pre-service education	<i>No</i>	68.9%	63.2%	64.8%	67.5%	63.5%	77.4%	71.2%	64.7%
	<i>Yes</i>	31.1%	36.8%	35.2%	32.5%	36.5%	22.6%	28.8%	35.3%
3. Attended CT seminars /workshop beyond pre-service education	<i>No</i>	96.6%	95.8%	96.6%	95.0%	96.0%	96.8%	93.7%	98.5%
	<i>Yes</i>	3.4%	4.2%	3.4%	5.0%	4.0%	3.2%	6.3%	1.5%
4. Read articles or books about critical thinking	<i>No</i>	77.0%	54.9%	66.3%	62.5%	63.6%	60.0%	54.1%	65.9%
	<i>Yes</i>	23.0%	45.1%	33.7%	37.5%	36.4%	40.0%	45.9%	34.1%
5. Course work which develops your own critical thinking	<i>No</i>	10.5%	5.0%	4.5%	10.9%	8.1%	3.3%	3.1%	9.2%
	<i>Yes</i>	75.6%	89.3%	79.5%	84.9%	83.1%	90.0%	85.9%	82.4%
	<i>Unsure</i>	14.0%	5.8%	15.9%	4.2%	8.7%	6.7%	10.9%	8.4%
6. Course work which develops pedagogical knowledge to teach for critical thinking	<i>No</i>	3.7%	5.2%	4.8%	3.5%	4.3%	6.7%	5.0%	3.9%
	<i>Yes</i>	88.9%	87.1%	83.1%	91.2%	89.5%	80.0%	85.0%	88.3%
	<i>Unsure</i>	7.4%	7.8%	12.0%	5.3%	6.2%	13.3%	10.0%	7.8%

DISCUSSION

RQ1: Overall, mathematics pre-service teachers in this study believed in the importance of developing students critical thinking skills. This belief arises because the mathematics has been learned since elementary school and because critical thinking skills and mathematics are inseparable. Mathematics material can be well understood through critical thinking and critical thinking can be trained through learning mathematics (Fonseca & Arezes, 2017). Thus, they are accustomed to the critical way of thinking along with their mathematics learning.

In addition, since 2015 all teacher education institutions have conducted the revitalization of curriculum in the form of National Curriculum Framework of Indonesia (NCFI). With NCFI, teacher education institutions are encouraged to design and provide learning environment and assessment that can improve critical thinking skills of teacher candidates (Kemendikbud, 2014).

Comparatively, skills related to critical thinking were deemed more important (on average) than other generic skills such as team work and persuasive communication. Two critical thinking skills were deemed particularly important: the ability to think independently and to present clear, logical arguments. These are encouraging results, considering teachers' choice of learning objectives in their lesson planning can have important influences in how they teach. For Lee & Takahashi (2011), the formulation of learning objectives is very important as a reference for teachers in designing learning materials. Interaction between teachers and students in the classroom during the learning

process is influenced by how the learning objectives are formulated. Thus, the formulation of learning objectives by the teachers will represent what mathematics material students should learn and what learning process teachers expect.

However, there seems to be a gap between beliefs about the value of teaching skills on the one hand, and dispositions on the other. CT dispositions such as willingness to revise one's belief/opinion were seen as much less important than non-CT dispositions such as religiosity and respect towards elders. This gap needs to be addressed, because dispositions are an essential part of critical thinking. In other words, being a critical thinker means having both a set of skills and the dispositions to apply to skills. A student who knows how to evaluate and compose strong arguments, for example, would mean little if she/he lacks the motivation to use that knowledge when necessary.

The comparative lack of value attached to CT dispositions is a matter of concern, because such dispositions are essential part of being a critical thinker (Abrami et al., 2015). In the context of teaching, teachers need to possess critical thinking disposition to enable them to present or teach critical thinking to their students (Sendag & Erol, 2015). Critical thinking dispositions are perceived as triggers, motivators and incentives to be skillful and accustomed to critical thinking (Sahin et al, 2016). In the context of mathematics teacher education, developing a critical thinking disposition will shape curiosity, awareness, dedication and a strong tendency for pre-service teachers to think and do mathematically in a positive way.

In mathematics, critical thinking takes the form of ways of thinking that put forward deductive processes. Through deductive thinking, a coherent and logical frame of mind can be established. This kind of thinking, requires a student who is studying mathematics to mobilize his ability in reasoning, to analyze and interpret his thinking in order to be able to understand and solve commonly abstract mathematics problems (in the form of facts, concepts, principles or skills).

These activities also require students to adopt certain dispositions such as persistence, diligence and constant focus on mathematics problems encountered and seek to find a solution. In their search for solutions, they need to plan problem-solving strategies from various sources (exploration), put ideas into solutions, compare solutions strategies with prior experience, and identify their relevance. When the solution is selected, they need to construct or, if necessary, reconstruct the idea before making a conclusion. This stage requires a confident attitude to the inquiry process in the discovery of a solution that is believed to be true. However, it also takes a willingness to acknowledge the mistake when there are less appropriate steps and solutions and to turn change them into correct solution.

RQ2: Results of this study indicate that most pre-service mathematics teacher believed they were ready to teach for CT. Even so, the results also indicate that many (more than 40%) feel unsure about their readiness to teach for critical thinking. Beliefs about readiness to teach can be seen as part of a teachers' teaching self-efficacy. This is because teachers with high self-efficacy will be able to facilitate students' learning despite students' difficulties and lack of motivation (Bandura, 1977). They are more

open in adopting new learning practices. Findings by Flores & Clark (2004) and Matthews et al. (2003) signify that teachers' self-efficacy in teaching influences teachers' communication styles, motivations, teachers' emotions while teaching, and teachers' patience in dealing with students with problems. Fung et al. (2017) also states that teachers' efficacy affects the way they teach and interact in the classroom which then affects the student's mathematics learning outcomes.

Qualitative responses indicate that lack of readiness may stem from a lack of pedagogical content knowledge on the teaching of critical thinking. One of causes is that lecturers only give chunks when facilitating mathematics pre-service teachers' understanding on critical thinking, *i.e.*, the lecturers teach 'quasi-critical thinking' (Ab Kadir, 2017).

An effective way to train critical thinking skills to mathematics pre-service teachers according to Akınoğlu & Karsantık (2016) is through modelling. Modelling can not only encourage the positive behavior of mathematics pre-service teachers in developing critical thinking skills but also develop their ways to teach critical thinking as the skills they must have in their teaching career later. Gelder (2005) confirms that pre-service teachers must have the ability to teach critical thinking, need to exercise regularly and constantly improve their critical thinking skills.

Considering the above issue, it is significant to facilitate pre-service teachers to have special knowledge and skills related to critical thinking pedagogical content knowledge (PCKCT). That is the knowledge of what critical thinking is, how and when to apply and integrate that knowledge into teaching material effectively (Ab Kadir, 2017). Therefore, providing PCKT during teacher education is fundamental. Without basic knowledge of adequate PCKT, it is very likely that they will continue to have lack of confidence and doubt in teaching critical thinking. Skilling et al. (2016) states that the experience of pre-service teachers in their teacher education will influence the way they teach later.

RQ3: Table 7 shows variation between participants in preference towards constructivist teaching, with about 40% preferring traditional approaches. This finding confirms previous finding of the lack of readiness of pre-service teachers to teach critical thinking. This is supposedly influenced by their experience during their coursework. Hong & Chai (2017) state that if their learning experience during the coursework is more on a conventional learning approach, they will develop more conventional-oriented beliefs. They will develop the belief that learning mathematics will succeed through a detailed process of explanation, comprehensive, and correct information related to mathematics formulas/ procedures. This can result from of lack experience of discovery learning and less opportunity provided by lecturers for self-exploration of given mathematics problems.

There is also variation across contexts or situations from the aspect of pre-service teacher education. Pre-service teachers were more willing to adopt constructivist approaches with regards to using collaboration, encouraging independent exploration, and deep learning (over content coverage). This is because they view these three capabilities crucial skills in critical thinking.

The research data shows that the above three aspects are achieved well by those who have the experience of reading, attending seminars / workshops related to critical thinking and better education. This finding is relevant to Kahan et al. (2003) opinion that the more reading and attending seminars/workshops in the field of critical thinking will stimulate wider perspectives so as to encourage understanding of the constructivist approach.

This group of pre-service teachers also increasingly see the importance of deep understanding of mathematics concepts and materials (Adler et al., 2014). This is characterized by the ability to make interrelationships between concepts and procedures and operations in mathematics. In addition, more frequent reading of books or attending seminars/workshops make them aware of the need for collaborative work in solving mathematics problems (O'Shea & Leavy, 2013). They think that the mathematics problems, mainly those that require the ability to think critically in the process of finding solution, are too difficult to be solve independently. Thus, collaborative work is regarded as a necessity. This is an important aspect of learning that can trigger a constructivist perspective.

One particular form of constructivist teaching which was unpopular concerned learning about unstructured and complex problems which do not have certain answers. This is due to their unfamiliarity with mathematics problems that require critical thinking skills (Nursyahidah & Albab, 2017). It should be suspected that mathematics problems often given during school and college only require more ability to apply formulas, procedures or algorithms. Once confronted with questions about unstructured and complex mathematics problems that require divergent answers, they seem to experience a shock. In fact, unstructured and complex mathematics problems can strengthen their critical thinking dispositions, thereby encouraging their sensitivity to critical thinking and the tendency to engage in critical thinking learning practices.

RQ4: The pattern of response suggests that for most participants, exposure to critical thinking knowledge and pedagogy is limited by what is available in their standard coursework. This further emphasizes the previous explanation that the coursework is still dominated by lectures (Iman, 2017). There are less opportunities for pre-service teachers to explore their skills (either independently or collaboratively) by providing more mathematics problems that require reasoning, analysis, evaluation and thinking interpretation to trigger the emergence of skills or critical thinking teaching experience.

The logical consequence of the above phenomenon is that few have sought to enrich their CT knowledge through independent study or from sources beyond their normal coursework. This can reflect that disposition of critical thinking has not yet been internalized in pre-service teachers. In this context, the disposition of critical thinking of curiosity to obtain information and learning new things is still low. Meanwhile, curiosity is important because it affects them in accepting various things including new learning approaches that encourage the development of critical thinking.

RQ5: Table 1 and previous elaboration show that some aspects of the pre-service education seem to contribute positively to cultivating the belief that CT skills need to be

taught, such as ability to synthesize information, to assess the credibility of source of information and to analyze evidence. But pre-service education seems to have little bearing on beliefs about the value of teaching for CT dispositions, and on preferences towards constructivist instruction.

Some important things to do to reform the learning in the teacher education institute to enhance the ability of critical thinking: (a) the lecturers should change the dominance of the lecturing in the learning process in order to provide more opportunities for pre-service teachers to ask questions, explore their skills, argue, discuss with friends. It is expected that such opportunities can develop pre-service teachers' potential and critical thinking skills, (b) the lecturers should always provide non-routine questions or tasks related to the real world and relate to daily life that will train pre-service teachers to think deeply, and (c) pre-service teachers should be provided with knowledge and specific skills related to adequate critical thinking pedagogy content knowledge, that is the knowledge of what critical thinking is, how and when to apply and integrate that knowledge into the practice of teaching materials effectively.

CONCLUSION AND LIMITATION

This research aims to explore the beliefs of mathematics pre-service teachers in Indonesia related to the ability to think critically and their implications on several aspects in the selection of learning approaches. Some important points of this research are highlighted as follows. Participants believed that some CT skills (thinking independently and logical communication) were important, but CT dispositions were not. About 60% believed they are prepared to teach CT and generally preferred constructivist over traditional instruction. Some aspects of the pre-service education were not associated with pedagogical beliefs about CT disposition, perceived preparedness, or preference for constructivist instruction (and only weakly associated with associated with belief about teaching CT skills). This highlights the need for mathematics teacher educators to give more emphasis on the importance of CT, especially its dispositional dimensions, and the role of constructivist instruction in developing CT.

REFERENCES

- Ab Kadir, M. A. (2017). What teacher knowledge matters in effectively developing Critical Thinkers in the 21st Century Curriculum? *Thinking Skills and Creativity*, 23/1, 79-90.
- Ab Kadir, M. A. (2015). Developing critical thinkers in 21st century: Gap in teacher education? In K.M. Baharul Islam and S.N. Iftekhhar (Ed), *International Perspectives on Comparative Education Policy* (pp. 330-342). New Delhi: Bloomsbury
- Abrami, P. C.; Bernard, R. M.; Borokhovski, E.; Waddington, D. I.; Wade, C. A. & Persson, T. (2015). Strategies for teaching students to think critically: A meta-analysis. *Review of Educational Research*, 85/2, 275–314.
- Adler, J.; Hossain, S.; Stevenson, M.; Clarke, J.; Archer, R. & Grantham, B. (2014). Mathematics for teaching and deep subject knowledge: voices of Mathematics

Enhancement Course students in England. *Journal of Mathematics Teacher Education* 17: 129–148.

Adnan, M. & Zakaria, E. (2010). Exploring beliefs of pre-service mathematics teachers : A Malaysian perspective. *Asian Social Science*, 6/2, 152-158.

Akınoğlu, O., & Karsantık, Y. (2016). Pre-service teachers' opinions on teaching thinking skills. *International Journal of Instruction*, 9/2, 61-76.

As'ari, A. R.; Mahmudi, A. & Nuerlaelah, E. (2017). Our prospective mathematic teachers are not critical thinker yet. *Journal on Mathematics Education*, 8/2, 145-156.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84/2, 191-215.

Barlow, A. T., & Reddish, J. M. (2006). Mathematical myths: Teacher candidates' beliefs and the implications for teacher educators. *Teacher Educator* 41:145-147.

Berliner, D. C. (2009). Rational response to high-stakes testing and the special case of narrowing the curriculum. In *International Conference on Redesigning Pedagogy, National Institute of Education, Nanyang Technological University, June* (Vol. 113).

Beswick, K. (2005). The beliefs/practice connection in broadly defined contexts. *Mathematics Education Research Journal*, 17/22, 39–68.

Cooney, T. J. (2001). Considering the paradoxes, perils, and purposes of conceptualizing teacher development. In F.L. Lin (Ed.), *Making sense of mathematics teacher education* (pp. 9 – 31). Dordrecht: Kluwer.

Dewantara, A. H.; Zulkardi & Darmawijoyo. (2015). Assessing seventh graders' mathematical literacy in solving PISA-Like tasks. *Journal on Mathematics Education*, 6/2, 117-128.

Didis, M. G.; Erbas, A. K.; Cetinkaya, B.; Cakiroglu, E. & Alacaci, C. (2016). Exploring prospective secondary mathematics teachers' interpretation of student thinking through analysing students' work in modelling. *Mathematics Education Research Journal* 28: 349-378.

Flores, B. B., & Clark, E. R. (2004). A critical examination of normalistas' self-conceptualization and teacher-efficacy. *Hispanic Journal of Behavioral Sciences* 26: 230–257.

Fonseca, L., & Arezes, S. (2017). A didactic proposal to develop critical thinking in mathematics : The case of Tomás. *Journal of the European Teacher Education Network* 12:37–48.

Fung, D., Kutnick, P., Mok, I., Leung, F., Pok-Yee Lee, B., Mai, Y. Y., & Tyler, M. T. (2017). Relationships between teachers' background, their subject knowledge and pedagogic efficacy, and pupil achievement in primary school mathematics in Hong Kong: An indicative study. *International Journal of Educational Research* 81: 119-130.

- Gelder, T. van. (2005). Teaching critical thinking: Some lessons from cognitive science. *College Teaching*, 53/1, 41-48.
- Grootenboer, P. (2008). Mathematical belief change in prospective primary teachers. *Journal of Mathematics Teacher Education*, 11/6, 479-497.
- Hallman-Thrasher, A. (2017). Prospective elementary teachers' responses to unanticipated incorrect solutions to problem-solving tasks. *Journal of Mathematics Teacher Education*, 20/6, 519-555.
- Hammerness, K.; Darling-Hammond, L.; Bransford, J.; Berliner, D.; Cochran-Smith, M., McDonald, M., & Zeichner, K. (2005). How teachers learn and develop. In L. Darling-Hammond (Ed.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 358-389). San Francisco, CA: John Wiley & Sons.
- Haran, U., Ritov, I., & Mellers, B. A. (2013). The role of actively open-minded thinking in information acquisition, accuracy, and calibration. *Judgment and Decision Making*, 8/3, 188-201.
- Hong, H.Y., & Chai, C.S. (2017). Principle-based design: Development of adaptive mathematics teaching practices and beliefs in a knowledge building environment. *Computers & Education* 115: 38-55.
- Iman, J. N. (2017). Debate instruction in EFL classroom: Impacts on the critical thinking and speaking skill. *International Journal of Instruction*, 10/4, 87-108.
- Innabi, H., & El Sheikh, O. (2007). The change in mathematics teachers' perceptions of critical thinking after 15 years of educational reform in Jordan. *Educational Studies in Mathematics* 64: 45-68.
- Kahan, J. A, Cooper, D. A, & Bethea, K. A. (2003). The role of mathematics teachers' content knowledge in their teaching: A framework for research applied to a study of student teachers. *Journal of Mathematics Teacher Education* 6: 223-252.
- Kemendikbud (2014). *Buku kurikulum pendidikan tinggi [The book of higher education curriculum]*. Jakarta, Indonesia: Direktorat Pembelajaran dan Kemahasiswaan, Direktorat Pendidikan Tinggi, Kementerian Pendidikan dan Kebudayaan.
- Kılıç, H. (2011). Preservice secondary mathematics teachers' knowledge of students. *Turkish Online Journal of Qualitative Inquiry*, 2/2, 17-35.
- Kurniati; Kusumah, Y. S.; Sabandar, J., & Herman, T. (2015). Mathematical critical thinking ability through contextual teaching and learning approach. *Journal on Mathematics Education*, 6/1, 53-62.
- Lailiyah, S.; Nusantara, T.; Sa'Dijah, C.; Irawan, E. B.; Kusaeri, & Asyhar, A. H. (2018). Structuring students' analogical reasoning in solving algebra problem. In *IOP Conference Series: Materials Science and Engineering* (Vol. 296, No. 1, p. 012029).
- Lee, C. W., Walkowiak, T. A., & Nietfeld, J. L. (2017). Characterization of mathematics instructional practises for prospective elementary teachers with varying

levels of self-efficacy in classroom management and mathematics teaching. *Mathematics Education Research Journal*, 29/1, 45-72.

Lee, Y. A., & Takahashi, A. (2011). Lesson plans and the contingency of classroom interactions. *Human Studies*, 34/2, 209–227.

Lui, A. M., & Bonner, S. M. (2016). Preservice and inservice teachers' knowledge, beliefs, and instructional planning in primary school mathematics. *Teaching and Teacher Education*. *Teaching and Teacher Education* 56:1-13.

Matthews, G., Deary, I. J., & Whiteman, M. C. (2003). *Personality traits, Second Edition*. Cambridge, NY: Cambridge University Press.

Nursyahidah, F., & Albab, I. U. (2017). *Investigating student difficulties on integral calculus based on critical thinking aspects*. *Jurnal Riset Pendidikan Matematika*, 4/2, 211-218.

O'Shea, J., & Leavy, A. M. (2013). Teaching mathematical problem-solving from an emergent constructivist perspective: The experiences of Irish primary teachers. *Journal of Mathematics Teacher Education*, 16/4, 293-318.

Oktiningrum, W., & Hartono, Y. (2016). Developing Pisa-Like mathematics task with Indonesia natural and cultural heritage as context to assess students' mathematical literacy. *Journal on Mathematics Education*, 7/1, 1-8.

Palinussa, A. L. (2013). Students' critical mathematical thinking skills and character: experiments for junior high school students through realistic mathematics education culture-based. *Journal on Mathematics Education*, 4/1, 75-94.

Prahmana, R.C.I., Zulkardi, Z., & Hartono, Y. (2012). Learning multiplication using Indonesian traditional game in third Grade. *Journal on Mathematics Education*, 3/2, 115-132.

Richardson, V., & Placier, P. (2001). Teacher change. In V. Richardson (Ed.), *Handbook of research on teaching*. Washington, DC: American Educational Research Association.

Sahin, S. A., Tunca, N., Altinkurt, Y., & Yilmaz, K. (2016). Relationship between professional values and critical thinking disposition of science-technology and mathematics teachers. *Eurasia Journal of Mathematics, Science & Technology Education*, 12/1, 25-40.

Sembiring, R. K., Hadi, S., & Dolk, M. (2008). Reforming mathematics learning in Indonesian classrooms through RME. *ZDM-International Journal on Mathematics Education* 40: 927–939.

Sendag, S., Erol, O., Sezgin, S. & Dulkadir, N. (2015). Pre-service teachers' critical thinking dispositions and Web 2.0 competencies. *Contemporary Educational Technology*, 6/3, 172-187

Skilling, K.; Bobis, J.; Martin, A. J.; Anderson, J., & Way, J. (2016). What secondary

teachers think and do about student engagement in mathematics. *Mathematics Education Research Journal* 28: 545–566.

Stanovich, K. E. (2016). The comprehensive assessment of rational thinking. *Educational Psychologist*, 51/1, 23–34.

Staples, M. E., & Truxaw, M. P. (2012). An initial framework for the language of higher-order thinking mathematics practices. *Mathematics Education Research Journal*, 24/3, 257–281.

Zohar, A., & Schwartz, N. (2005). Assessing teachers' pedagogical knowledge in the context of teaching higher-order thinking. *International Journal of Science Education*, 27/13, 1595-1620.

International Journal of Instruction



ISSN 0022-0272 (print) 1473-0400 (online)
DOI: 10.1080/00220272.2014.900000



()



You are here: / e-iji.net - Home Page () / Editorial Board

Search ...



Editorial Board (/editorial-board)

Hits: 133156

Publisher

Gate Association for Teaching and Education (GATE) (<http://www.gate-academy.net>)

Editor in Chief

Prof. Asum ARI (/editorial-board/104-dergiler/301-prof-asim-ari?lang=en-GB)
Eskişehir Osmangazi University, TURKEY

Managing Editor

Asst. Prof. Gökhan KAYIR
Celal Bayar University, TURKEY

Assistant Editors

Dr. Kerim SARIGÜL (<http://kerimsarigul.com/hakkimda>)
Gazi University

Editorial Assistant

Dr. Rza MAMMADOV
Dr. Eren AKDAĞ KURNAZ
Dumlupınar University, TURKEY

Technical Assistant

Dr. Zehra Sümeyye ERTEM
Dr. Özgür SİREM
MEB, TURKEY

Editors

Prof. Yousif A. ALSHUMAIMERI
(<https://fac.ksu.edu.sa/yousif/cv>)
King Saud University, SAUDI ARABIA
Prof. Luis E. ANIDO RIFÓN (https://gist.det.uvigo.es/~lanido/index_en.htm)
University of Vigo, SPAIN
Prof. Trevor BOND (<https://research.jcu.edu.au/portfolio/trevor.bond/>)
James Cook University, AUSTRALIA
Prof. Bronwen COWIE
(<https://www.waikato.ac.nz/staff-profiles/people/bcowie>)
University of Waikato, NEW ZEALAND

Assoc. Prof. Sheng-Wen HSIEH
(<http://onyx.feu.edu.tw/eng/index.asp>)
Far East University, TAIWAN
Prof. Jennifer L. JOLLY (<https://getdo.ua.edu/office-leadership.html>)
The University of Alabama, USA
Prof. Piet KOMMERS (<http://www.pietkommers.nl/423814097>)
University of Twente, NETHERLANDS
Prof. Christoph RANDLER (<https://uni-tuebingen.de/it/fakultaeten/mathematisch-naturwissenschaftliche-fakultaet/fachbereiche/biologie/institute/didaktik-der-biologie/personen/prof-dr-christoph-randler/>)
University of Tübinge, GERMANY
Prof. Elsebeth Korsgaard SORENSEN
(<https://vbn.aau.dk/en/persons/103878>)
University of Aarhus, DENMARK

Prof. Do COYLE (<https://www.ed.ac.uk/profile/do-coyle>)
The University of Edinburgh, UNITED KINGDOM



E-IJI.NET

- Editorial Board (/editorial-board)
- Advisory Board (/advisory-review-board)
- Abstracting / Indexing (/abstracting-indexing)
- Author Guidelines (/author-guidelines)
- Manuscript Template (/dosyalar/iji_model.doc)
- Notes to Contributors (/notes-to-contributes)
- Notes to Editorials (/notes-to-editorials)
- Open Access Policy (/open-access-policy)
- Publication Ethics & Malpractice Statement (/publication-ethics-malpractice-statement)
- Submit Your Article (/article-submission)

ARTICLE STATISTICS

Article Submitted: 12168
Article Published: 1586



e-ISSN: 1308-1470
p-ISSN: 1694-609x



(<https://www.gate-academy.net/>)

Gate Association for Teaching and Education
(<https://www.gate-academy.net/>)

Anatolian Journal of Education (<http://e-aje.net/index.php?lang=en>)





(/)



You are here: / e-iji.net - Home Page (/) / VOLUMES (/volumes) / January 2019, Volume 12, Number 1

January 2019, Volume 12, Number 1 (/volumes/353-january-2019,-volume-12,-number-1)

Hits: 31944

Contents .pdf (/dosyalar/iji_2019_1_contents.pdf)

From The Editor (/dosyalar/iji_2019_1_0.pdf)

Burcu Karafil

Distance Learning in Elementary School Classrooms: an Emerging Framework for Contemporary Practice (/dosyalar/iji_2019_1_1.pdf)

Gulnara M. Burdina, Irina E. Krapotkina, Liliya G. Nasyrova

The Effectiveness of Research Based Learning in Improving Students' Achievement in Solving Two-Dimensional Arithmetic Set Problems (/dosyalar/iji_2019_1_2.pdf)

Suntusia, Dafik, Hobri

The Effect of Critical Discourse-Based Instruction on Iranian English Major Students' Reading Comprehension (/dosyalar/iji_2019_1_3.pdf)

Javad Javadi, Mohammad Mohammadi

A Study of the Relationship between Iranian Learners' Sociocultural Identity and English as a Foreign Language (EFL) Learning (/dosyalar/iji_2019_1_4.pdf)

Habib Mohammadi, Siros Izadpanah

Implementing the Math Workshop Approach: An Examination of Perspectives among Elementary, Middle, and High School Teachers (/dosyalar/iji_2019_1_5.pdf)

Laurie A. Sharp, Gay Lynn Bonjour, Ernest Cox

Investigating the Effect of Noticing on EFL Students' Speaking Accuracy (/dosyalar/iji_2019_1_6.pdf)

Hossein Navidinia, Farzaneh Malekzadeh, Mohsen Mobaraki

What Can Stories on History of Science Give to Students? Thoughts of Science Teachers Candidates (/dosyalar/iji_2019_1_7.pdf)

Canan Laçin-Şimşek

Living Values Based Interactive Multimedia in Civic Education Learning (/dosyalar/iji_2019_1_8.pdf)

Kokom Komalasari, Rahmat

Evaluation of the Teacher Education Programs in EFL Context: A Testimony of Student Teachers' Perspective (/dosyalar/iji_2019_1_9.pdf)

Abdul Karim, Faheem Hasan Shahed, Abdul Rashid Mohamed, Mohammad Mosiur Rahman, Shaik Abdul Malik Mohamad

Development of Group Science Learning (GSL) Model to Improve the Skills of Collaborative Problem Solving, Science Process Skills, and Confidence of Primary Schools Teacher Candidates (/dosyalar/iji_2019_1_10.pdf)

Jauharoti Alfin, Ah. Zakki Fuad, Mohamad Nur, Leny Yuanita, Binar Kurnia Prahani

Iranian EFL Teachers' Willingness to Implement Postmethod Pedagogy: Development and Validation of a Questionnaire (/dosyalar/iji_2019_1_11.pdf)

Jalil Fathi, Raziieh Hamidizadeh

Portfolios as a Strategy to Lower English Language Test Anxiety: The Case of Chile (/dosyalar/iji_2019_1_12.pdf)

Amanda Contreras-Soto, Mauricio Véliz-Campos, Leonardo Véliz

Perceptions of Inclusion Education by Parents of Elementary School-Aged Children in Lampung, Indonesia (/dosyalar/iji_2019_1_13.pdf)

Sofwan Adiputra, Mujiyati, Tri Yuni Hendrowati

The Effect of Different Types of Peer Feedback Provision on EFL Students' Writing Performance (/dosyalar/iji_2019_1_14.pdf)

Shirly Rizki Kusumaningrum, Bambang Yudi Cahyono, Johannes Ananto Prayogo

A Comparison between Deductive and Inductive Approaches for Teaching EFL Grammar to High School Students (/dosyalar/iji_2019_1_15.pdf)

Carmen Benitez-Correa, Paul Gonzalez-Torres, Cesar Ochoa-Cueva, Alba Vargas-Saritama

The Influence of Male and Female ESP Teachers' Creativity toward Learners' Involvement (/dosyalar/iji_2019_1_16.pdf)

Yudhi Arifani, Sri Suryanti

Assessment Model of Student Field Practice at Faculty of Tarbiyah and Teaching Training in Indonesia: A Reality and Expectation (/dosyalar/iji_2019_1_17.pdf)

Kasim Yahiji, Lian G. Otaya, Herson Anwar

Correlation of Physical Development Indicators with Speed-Strength Performance in 11-12-Year-Old Boys (/dosyalar/iji_2019_1_18.pdf)

Almaz Faridovich Miftakhov, Afanasiy Afanasievich Sergin, Viktor Georgievich Starostin, Vladimir Gavrilyevich Torgc Nikolaevna Savinkova

The Implementation of Literary Sociology Learning Model with Contextual and Spiritual Quotient Approach to Teach Literary Science (/dosyalar/iji_2019_1_19.pdf)

Masnuatul Hawa, Andayani, Suyitno, Nugraheni Eko Wardani

Next Generation Science Standard in Science Learning to Improve Student's Practice Skill (/dosyalar/iji_2019_1_20.pdf)

Eka Rachmawati, Anti Kolonial Prodjosantoso, Insih Wilujeng

The Problem of Students in Reading the Quran: A Reflective-Critical Treatment through Action Research (/dosyalar/iji_2019_1_21.pdf)

Tedi Supriyadi, J. Julia
Improving Students' Critical Thinking Skills in Cell-Metabolism Learning Using Stimulating Higher Order Thinking Skills Model (/iji_2019_1_22.pdf)

Arnita Cahya Saputri, Sajidan, Yudi Rinanto, Afandi, Nanik Murti Prasetyanti

The Effect of Mathematical Disposition on Mathematical Power Formation: Review of Dispositional Mental Functions (/dosyalar/iji_2019_1_23.pdf)

Imam Kusmaryono, Hardi Suyitno, Dwijanto Dwijanto, Nurkaromah Dwidayati

The Content of Educational Programs in Technical Universities: Quality of Applying the Modern Professional Standards (/dosyalar/iji_2019_1_24.pdf)

Ramil R. Khairutdinov, Rais S. Safin, Evgeniy A. Korchagin, Flera G. Mukhametzyanova, Anastasia V. Fakhrutdinova, Nikishina

Assessing Eighth-Grade Mathematics Teachers and Textbook in Embodying Thinking Levels (/dosyalar/iji_2019_1_25.pdf)

Mohammad Ahmad Alkhateeb

Effects of Collaborative Tasks on EFL Learners' Written Production (/dosyalar/iji_2019_1_26.pdf)

Zahra Yahyazadeh Jelodar, Mohammad Taghi Farvardin

Teaching and Learning Activities in Classroom and Their Impact on Student Misunderstanding: A Case Study on Negative Integer (/dosyalar/iji_2019_1_27.pdf)

Nyiyayu Fahriza Fuadiah, Didi Suryadi, Turmudi

Understanding, Planning, and Implementation of HOTS by Senior High School Biology Teachers in Banjarmasin-Indonesia (/dosyalar/iji_2019_1_28.pdf)

Siti Ramdiah, Abidinsyah, M. Royani, Husamah

The Integration of Intercultural Education into Teaching English: What Vietnamese Teachers Do and Say (/dosyalar/iji_2019_1_29.pdf)

Chau Thi Hoang Hoa, Truong Vien
Cognition Processes of Students with High Functioning Autism Spectrum Disorder in Solving Mathematical Problems (/dosyalar/iji_2019_1_30.pdf)

Nur Fauziah, Carol Le Lant, I Ketut Budayasa, Dwi Juniati

Differences in English Proficiency Test Scores between Students of Social and Natural Sciences (/dosyalar/iji_2019_1_31.pdf)

Usman Kasim, Asnawi Muslem, Faisal Mustafa

Exploring Pre-Service Teachers' Perceptions of Their Pedagogical Preferences, Teaching Competence and Motivation (/dosyalar/iji_2019_1_32.pdf)

Sadiq Abdulwahed Ahmed Ismail, Adeeb Mohamed Jarrah

Traditional Dances as a Means of Teaching Social Skills to Elementary School Students (/dosyalar/iji_2019_1_33.pdf)

Grigorios Masadis, Filippos Filippou, Vasiliki Derri, Georgios Mavridis, Stella Rokka

The Effect of Blended Learning on Student's Learning Achievement and Science Process Skills in Plant Tissue Culture Course (/dosyalar/iji_2019_1_34.pdf)

Fauziah Harahap, Nanda Eska Anugrah Nasution, Binari Manurung

Effectiveness of Using Football Basics in Physical Education and Organizing Arts and Cultural Events for Promoting Harmonious Development of Orphan Children (/dosyalar/iji_2019_1_35.pdf)

Elvir Munirovich Akhmetshin, Almaz Faridovich Miftakhov, Dilyara Akhnafovna Murtazina, Rodion Pavlovich Sofrono Mikhailovna Solovieva, Vyacheslav Anatolyevich Blinov

Using the Flipped Classroom Model in the Development of Basic Language Skills and Enriching Activities: Digital Stories and Games (/dosyalar/iji_2019_1_36.pdf)

Pinar Girmen, Mehmet Fatih Kaya

Pedagogical Beliefs about Critical Thinking among Indonesian Mathematics Pre-service Teachers (/dosyalar/iji_2019_1_37.pdf)

Kusaeri, Anindito Aditomo

Developing Creativity and Entrepreneurship of Undergraduate Students through a Field Trip Overseas (/dosyalar/iji_2019_1_38.pdf)

Mayuree Suacamram
Strategy of Values Education in the Indonesian Education System (/dosyalar/iji_2019_1_39.pdf)

Suyatno, Jumintono, Dholina Inang Pambudi, Asih Mardati, Wantini

The Advocacy Model of Indonesian Chinese Students, the Affluent Market (/dosyalar/iji_2019_1_40.pdf)

Leonnard, Yulita Fairina Susanti

Effect of Dance Aerobic Programs on Intrinsic Motivation and Perceived Task Climate in Secondary School Students (/dosyalar/iji_2019_1_41.pdf)

Stella Rokka, Olga Kouli, Evangelos Bebetos, Dimitrios Goulmaris, George Mavridis

Empowering Physics Students' Performance in a Group Discussion Through two Types of Peer Assessment (/dosyalar/iji_2019_1_42.pdf)

Rif'ati Dina Handayani, Marlina Ummas Genisa, Triyanto

Impacts of Teacher-Written Corrective Feedback with Teacher-Student Conference on Students' Revision (/dosyalar/iji_2019_1_43.pdf)

Ida Isnawati, Gunadi Harry Sulisty, Utami Widiati, Nunung Suryati

The Effectiveness of Poetry Appreciation Textbook for Character Education Implementation at Higher Education (/dosyalar/iji_2019_1_44.pdf)

Oktaviani Windra Puspita, Andayani, Herman J. Waluyo, Muhammad Rohmadi

Teacher Competence in Authentic and Integrative Assessment in Indonesian Language Learning (/dosyalar/iji_2019_1_45.pdf)

Adnan, Sarwiji Suwandi, Joko Nurkamto, Budhi Setiawan

Turkish Academics' Foreign Language Academic Literacy: A Needs Analysis Study (/dosyalar/iji_2019_1_46.pdf)

Gül Durmuşoğlu Köse, İlknur Yüksel, Yusuf Öztürk, Musa Tömen

The Effect of Guided Inquiry Learning and Cognitive Style on Science Learning Achievement (/dosyalar/iji_2019_1_47.pdf)

I Gede Margunayasa, Nyoman Dantes, A.A.I.N Marhaeni, I Wayan Suastra

Enhancing Pilot's Aviation English Learning, Attitude and Motivation through the Application of Content and Language Integrated Learning (/dosyalar/iji_2019_1_48.pdf)

Parvin Karimi, Ahmad Reza Lotfi, Reza Biria

Implementation of ICT Policy (Blended Learning Approach): Investigating factors of Behavioural Intention and Use Behaviour (/dosyalar/iji_2019_1_49.pdf)

Mohd Azli Yeop, Mohd Faiz Mohd Yaakob, Kung Teck Wong, Yahya Don, Farah Mohamad Zain

Determination of Multi-Dimensional Self-Efficacy Beliefs of Prospective Teachers towards Creative Drama Activities (/dosyalar/iji_2019_1_50.pdf)

Murat Tezer, Sebnem Guldal Kan, Cizem Bas

An Investigation into Receptive Vocabulary Growth and Its Predictability for Reading Development of University Students in a 12-Week Course (/dosyalar/iji_2019_1_51.pdf)

Zahid Hussain Pathan, Shaik Abdul Malik Mohamed Ismail, Niaz Hussain Soomro

The Effect of Online Problem Posing on Students' Problem-Solving Ability in Mathematics (/dosyalar/iji_2019_1_52.pdf)

I Made Suarsana, Ida Ayu Putu Diah Lestari, Ni Made Sri Mertasari

A Mixed Method Study of Teachers' Attitudes towards Computer Pronunciation Software in Teaching English Pronunciation (/dosyalar/iji_2019_1_53.pdf)

Abbas Pourhosein Gilakjani, Reihaneh Sheikhy, Iraj Montashery, Mitra Alizadeh

The Relationship between Grade 9 Teacher's and Learner's Perceptions and Attitudes with Their Mathematics Achievement (/dosyalar/iji_2019_1_54.pdf)

Mathelela Steyn Mokgwathi, Marien Alet Graham, William Fraser

Analysis of the Studies Concerning Flipped Learning Model: A Comparative Meta-Synthesis Study (/dosyalar/iji_2019_1_55.pdf)

İshak Kozikoğlu

Effects of Shadowing and Tracking on Intermediate EFL Learners' Oral Fluency (/dosyalar/iji_2019_1_56.pdf)

Fereshteh Yavari, Sajad Shafiee

The Perception of Students and Faculty Staff on the Role of Constructive Feedback (/dosyalar/iji_2019_1_57.pdf)

Abdulghani Ali Al-Hattami

A Case Study: Focusing on Sustainability Themes and Ecomposition through Student Blogs in a Professional and Technical Course (/dosyalar/iji_2019_1_58.pdf)

Tara Hembrough

The Truth-Seeking and Open-Mindedness of Pre-Service Mathematics Teachers in the Solution of Non-Routine Problems (/dosyalar/iji_2019_1_59.pdf)

Dian Kurniati, Purwanto, Abdur Rahman As'ari, Dwiyanita

Developing and Validating a Scale to Measure Turkish and Kazakhstani ELT Pre-Service Teachers' Intercultural Communicative Competence (/dosyalar/iji_2019_1_60.pdf)

Lazura Kazykhankyzy, Nuray Alagözlü

Exploring Classroom Emotion with Cloud-Based Facial Recognizer in the Chinese Beginning Class: A Preliminary Study (/dosyalar/iji_2019_1_61.pdf)

Chinun Boonroungrut, Toe Toe Oo, Kim One

A Meta-Summary of Qualitative Findings about STEM Education (/dosyalar/iji_2019_1_62.pdf)

Sedat Kanadlı

The Impact of Musical Mnemonic on Vocabulary Recalling of Iranian Young Learners (/dosyalar/iji_2019_1_63.pdf)

Zahra Nikkhah Bahrami, Siros Izadpanah, Houman Bijani

The Relationship between Iranian English High School Teachers' Reflective Practices, Their Self-Regulation and Teaching Exp
(/dosyalar/iji_2019_1_64.pdf)

Hamzeh Pazhoman, Mehdi Sarkhosh

Supporting Blended Learning Using Mobile Instant Messaging Application: Its Effectiveness and Limitations (/dosyalar/iji_2019

Wayan Suana, I Wayan Distrik, Kartini Herlina, Nengah Maharta, Ni Made Anggi Arlina Putri

Quality of Peer Feedback in relation to Instructional Design: A Comparative Study in Energy and Sustainability MOOCs (/dosyalar/iji_2019_1_66.pdf)

Josemaría Elizondo-García, Christian Schunn, Katherina Gallardo

Key Stakeholders' Attitudes in ESP Courses on the Right Teachers (/dosyalar/iji_2019_1_67.pdf)

Seyyed Hossein Mousavi, Javad Gholami, Mehdi Sarkhosh

Malaysian Speaking Proficiency Assessment Effectiveness for Undergraduates Suffering from Minimal Descriptors (/dosyalar/iji_2019_1_68.pdf)

Karwan Mustafa Saeed, Shaik Abdul Malik Mohammad Ismail, Lin Siew Eng

Developing Critical-Thinking Skills through the Collaboration of Jigsaw Model with Problem-Based Learning Model (/dosyalar/iji_2019_1_69.pdf)

Maskhur Dwi Saputra, Soetarno Joyoatmojo, Dewi Kusuma Wardani, Khresna Bayu Sangka

Geometric Thinking of Malaysian Elementary School Students (/dosyalar/iji_2019_1_70.pdf)

Aida Suraya MdYunus, Ahmad Fauzi Mohd Ayub, Tan Tong Hock

The Effect of Concrete-Pictorial-Abstract Strategy toward Students' Mathematical Conceptual Understanding and Mathematica Representation on Fractions (/dosyalar/iji_2019_1_71.pdf)

I Made Ari Purwadi, I Gusti Putu Sudiarta, I Nengah Suparta

Pedagogical Utility of Pre-Listening Activities for Improving Iranian Elementary EFL Learners' Listening Comprehension (/dosyalar/iji_2019_1_72.pdf)

Fatemeh Karimi, Azizeh Chalak, Reza Biria

Malaysian Rural Secondary School Students' Attitudes towards Learning English as a Second Language (/dosyalar/iji_2019_1

Farah Zulkefely, Abu Bakar Razali

Examination of Pre-service Teachers' Interpretation Case of Fossil Words in Turkish Reduplications/Idioms (/dosyalar/iji_2019_1_73.pdf)

Bekir Direkci

Students' Pre-Initial Mental Model: The Case of Indonesian First-Year of College Students (/dosyalar/iji_2019_1_75.pdf)

Anita Dewi Utami, Cholís Sa'dijah, Subanji, Santi Irawati

Transpositions of Function Concept in Mathematics Curricula and Textbooks from the Historical Development Perspective (/dosyalar/iji_2019_1_76.pdf)

Mustafa Gök, Abdulkadir Erdoğan, Emel Özdemir Erdoğan

Enhancing Different Ethnicity Science Process Skills: Problem-Based Learning through Practicum and Authentic Assessment (/dosyalar/iji_2019_1_77.pdf)

Hilarius Jago Duda, Herawati Susilo, Peter Newcombe

Discourse Patterns in English as an L2 Classroom in India (/dosyalar/iji_2019_1_78.pdf)

Sarat Kumar Doley

A Path Analysis of Typical Intellectual Engagement, Learning Style and Preference for Assessment (/dosyalar/iji_2019_1_79.pdf)

Maleki Ali Reza, Mitra Zeraatpishe, Akram Faravani

A Structural Equation Model Describes Factors Contributing Teachers' Job Stress in Primary Schools (/dosyalar/iji_2019_1_80.pdf)

Anis Salwa Abdullah, Siti Noor Ismail

The Effect of Vodcasting Tasks on EFL Listening Comprehension Progress in an Online Program (/dosyalar/iji_2019_1_81.pdf)

Sajad Faramarzi, Hossein Heidari Tabrizi, Azizeh Chalak

Impact of Parental Separation on the Self-Esteem of in-School Adolescents in Nigeria (/dosyalar/iji_2019_1_82.pdf)

Mulikat Ladi AbdulQadir Mustapha, Deborah Odediran

Cross-linguistic Influence in the L3 Acquisition of English Adjective Properties by Azeri-Persian Bilinguals (/dosyalar/iji_2019_1_83.pdf)

Maryam Ghezlou, Mansoor Koosha, Ahmad Reza Lotfi

The Impact of Application of Electronic Portfolio on Undergraduate English Majors' Writing Proficiency and their Self-Regulation (/dosyalar/iji_2019_1_84.pdf)

Samaneh Karami, Firooz Sadighi, Mohammad Sadegh Bagheri, Mohammad Javad Riasati

Effects of Teaching and Learning Supervision on Teachers Attitudes to Supervision at Secondary School in Kubang Pasu District (/dosyalar/iji_2019_1_85.pdf)

Hareesol Khun-inkeeree, Puteri Darishah Dali, Yaakob Daud, Mohd Sofian Omar Fauzee, Rozalina Khalid

Adolescents' Limited Eclectic Personal Ethics and Heuristic Ways of Resolving Moral Problems (/dosyalar/iji_2019_1_86.pdf)

Eric Datu Agustin

Trends of Homework in Mathematics: Comparative Research Based on TIMSS Study (/dosyalar/iji_2019_1_87.pdf)

Ufuk Güven, Ahmet Oğuz Akçay

Measurement Instrument of Scientific Reasoning Test for Biology Education Students (/dosyalar/iji_2019_1_88.pdf)

Bagus Endri Yanto, Bambang Subali, Slamet Suyanto

Cooperative Learning Strategies to Enhance Writing Skills among Second Language Learners (/dosyalar/iji_2019_1_89.pdf)

Qismullah Yusuf, Zalina Jusoh, Yunisrina Qismullah Yusuf

The Adaptation of Learning Strategies for Higher Education Scale for Turkish Context (/dosyalar/iji_2019_1_90.pdf)

Sayime Erben Kecici, Mustafa Aydın

The Position and Causes of Students Errors in Algebraic Thinking Based on Cognitive Style (/dosyalar/iji_2019_1_91.pdf)

Arief Agoestanto, Y. L. Sukestiyarno, Isnarto, Rochmad, M. D. Lestari

Examination of the Reading Self-Efficacy of Learners of Turkish as a Foreign Language Regarding Some Variables (/dosyalar/iji_2019_1_92.pdf)

Gürkan Morali

Effectiveness of a Generative Learning-Based Biology Module to Improve the Analytical Thinking Skills of the Students with High Reading Motivation (/dosyalar/iji_2019_1_93.pdf)

Widya Prawita, Baskoro Adi Prayitno, Sugiyarto

The Misconception Diagnosis on Ionic and Covalent Bonds Concepts with Three Tier Diagnostic Test (/dosyalar/iji_2019_1_94

Anti Kolonial Prodjosantoso, Artanti Mulia Hertina, Irwanto

Creativity Level of Hearing Impaired and Hearing Students of Federal College of Education (/dosyalar/iji_2019_1_95.pdf)

Dorcias Sola Daramola, Muhinat Bolanle Bello, Abdul Raheem Yusuf, Ismaila Oteikwu O. Amali

Task Types Effects and Task Involvement Load on Vocabulary Learning of EFL Learners (/dosyalar/iji_2019_1_96.pdf)

Parviz Alavinia, Hanieh Rahimi

The Analysis of the Problems Posed by Pre-service Elementary Teachers for the Addition of Fractions (/dosyalar/iji_2019_1_9

Sumeyra Dogan-Coskun

English Language Teaching in Secondary Schools: An Analysis of the Implementation of Indonesian ELT 2013 Curriculum (/dc/iji_2019_1_98.pdf)

Nina Sofiana, Husni Mubarak, Issy Yuliasri

Cognitive Maps of the Beliefs of Pre-service Mathematics Teachers Regarding Mathematics: A Phenomenological Research (/iji_2019_1_99.pdf)

Vildan Katmer-Bayraklı, Yavuz Erişen

An Analysis of Quality Assurance Key Performance Indicators in Research in Ugandan Universities (/dosyalar/iji_2019_1_100

Matovu Musa

Do the Learner-centered Approaches Increase Academic Performance? Effect of the Layered Curriculum on Students' Academic Achievement in English Lesson (/dosyalar/iji_2019_1_101.pdf)

Burhan Üzümlü, Ata Pesen

Designing and Validating Teachers' Professional Development Scale: Iranian EFL Contexts in Focus (/dosyalar/iji_2019_1_10

Leila Saberi, Rahman Sahragard

The Role of Personal Best Goals in EFL Learners' Behavioural, Cognitive, and Emotional Engagement (/dosyalar/iji_2019_1_

Mostafa Hosseini Ramshe, Mohammad Ghazanfari, Behzad Ghonsooly

A Model and Questionnaire of Language Education Globalization in Iran (/dosyalar/iji_2019_1_104.pdf)

Esmaeel Ali Salimi, Mohammad Meisam Safarzadeh

International Journal of Instruction apply the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International (CC BY-NC-ND) all manuscripts to be published.

[HOMEPAGE \(/\)](#)

[ABOUT US \(/ABOUT-US\)](#)

[VOLUMES \(/VOLUMES\)](#)

[CONTACT \(/CONTACT\)](#)

SJR Scimago Journal & Country Rank

Home Journal Rankings Country Rankings Viz Tools Help About Us

Enter Journal Title, ISSN or Publisher Name

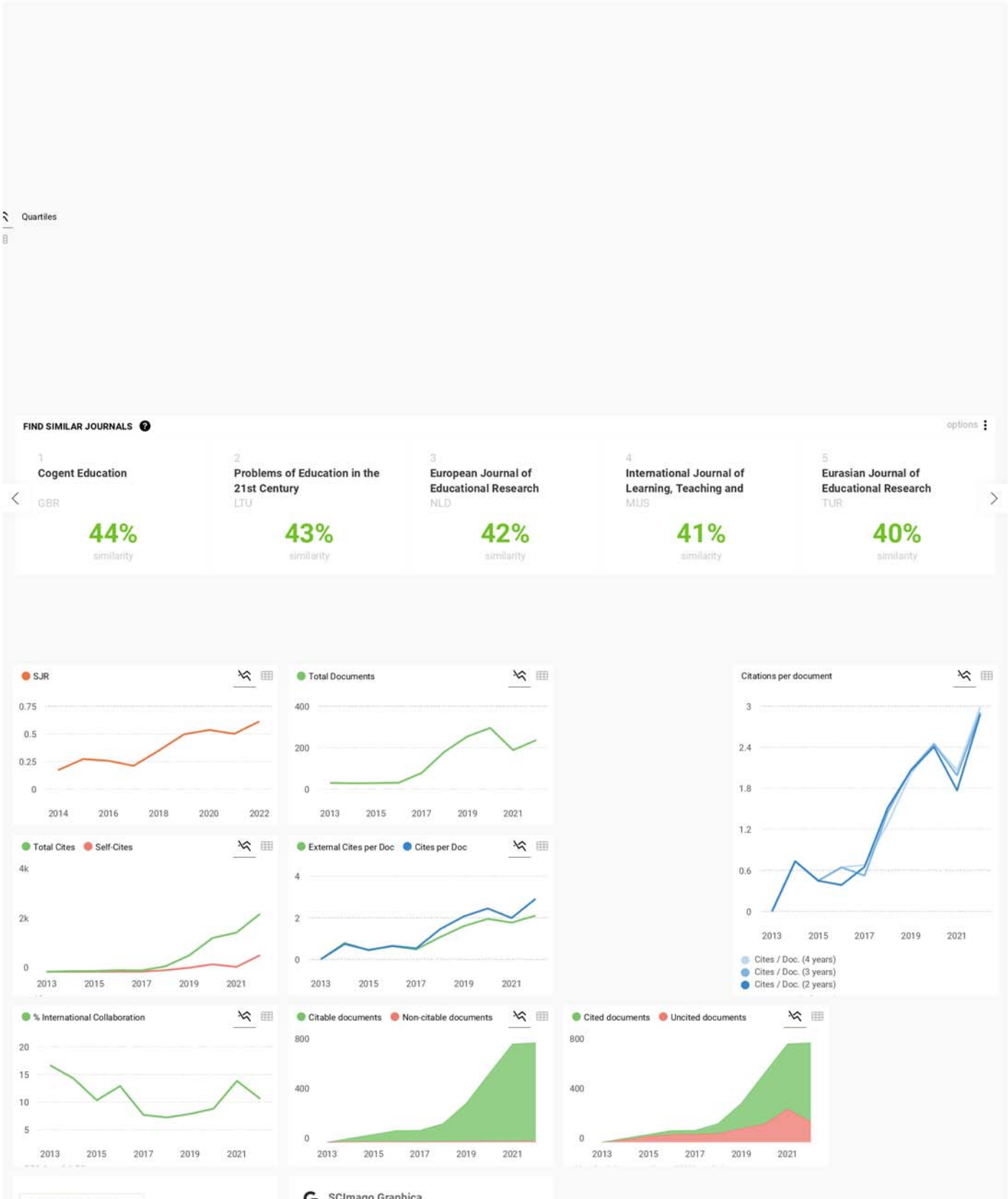
International Journal of Instruction

<p>COUNTRY</p> <p>Switzerland</p> <ul style="list-style-type: none"> Universities and research institutions in Switzerland Media Ranking in Switzerland 	<p>SUBJECT AREA AND CATEGORY</p> <p>Social Sciences Education</p>	<p>PUBLISHER</p> <p>Gate Association for Teaching and Education</p>	<p>H-INDEX</p> <p>32</p>
<p>PUBLICATION TYPE</p> <p>Journals</p>	<p>ISSN</p> <p>1694609X, 13081470</p>	<p>COVERAGE</p> <p>2013-2022</p>	<p>INFORMATION</p> <p>Homepage How to publish in this journal iji@ogu.edu.tr</p>

SCOPE

International Journal of Instruction is an internationally recognized journal in the field of education and is published four times a year (in January, April, July & October). The aim of this journal is to publish high quality studies in the areas of instruction, learning, teaching, curriculum development, learning environments, teacher education, educational technology, educational developments. Studies may relate to any age level - from infants to adults. IJI, being an international journal, our editorial advisory board members are from various countries around the world. The articles sent to the Journal are always reviewed by two members of the Editorial Advisory Board (double blind peer review), and in some cases, if necessary, by another member of the Board. Depending on the evaluation reports of the members of the Editorial Advisory Board, articles are published or not. Article evaluation process takes approximately three months. The authors are responsible for the errors, if any, in their published articles. The articles need to be not published elsewhere previously.

Join the conversation about this journal



← Show this widget in your own website

Just copy the code below and paste within your html code:

```
<a href="https://www.scimagojr.com" style="color: #007bff; text-decoration: none;">https://www.scimagojr.com
```

Explore, visually communicate and make sense of data with our [new data visualization tool](#).

Metrics based on Scopus® data as of April 2023


C **Carlinda Leite** 4 months ago

I, with colleagues involved in a project focused on youth participation in schools, are finishing an article. We would like to submit it to the International Journal of Instruction. Is it an issue interesting to the journal?

I will appreciate to have a response.

Carlinda Leite (Portugal, UPorto University)

[reply](#)

 **Melanie Ortiz** 4 months ago SCImago Team

Dear Carlinda,

Thank you for contacting us.

We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.

We suggest you visit the journal's homepage (See submission/author guidelines) or contact the journal's editorial staff, so they could inform you more deeply.

Best Regards, SCImago Team

H **Halimatussakdiah** 5 months ago

Dear SJR Team,

Best regards, I am Halimatussakdiah, a doctoral student at Sebelas Maret University, Surakarta, Indonesia. I want to ask the Scimago Team regarding Quartil in the "International Journal of Instruction", that the information in Scopus is in Q1 but in Scimago is in Q2, which is actually true.

SJR publishes Q2 rank for the International Journal of Instruction while officers of the journal advertise in their mails they are actually at Q1.


I have just checked Scopus rank and found this "The International Journal of Instruction" is now in Quartile 1. When will SCIMAGO update this?

Please confirm from the Scimago Team. Thank You

Thanks for your reply.

Halimatussakdiah

[reply](#)

 **Melanie Ortiz** 5 months ago SCImago Team

Dear Halimatussakdiah, Thank you for contacting us.

As you probably already know, our data come from Scopus, they annually send us an update of the data. This update is sent to us around April / May every year.

The calculation of the indicators is performed with the copy of the Scopus database provided to us annually. However, the methodology used concerning the distribution of Quartiles by Scopus is different from the one used by SCImago.

For every journal, the annual value of the SJR is integrated into the distribution of SJR values of all the subject categories to which the journal belongs. There are more than 300 subject categories. The position of each journal is different in any category and depends on the performance of the category, in general, and the journal, in particular. The distribution of Quartiles cannot be considered over the journals' total amount within a Category. In the case of SCImago, the distribution has to be considered with the formula Highest-SJR minus Lowest-SJR divided into four.

Best Regards,

SCImago Team

SJR Scimago Journal & Country Rank

Enter Journal Title, ISSN or Publisher Name

Home Journal Rankings Country Rankings Viz Tools Help About Us

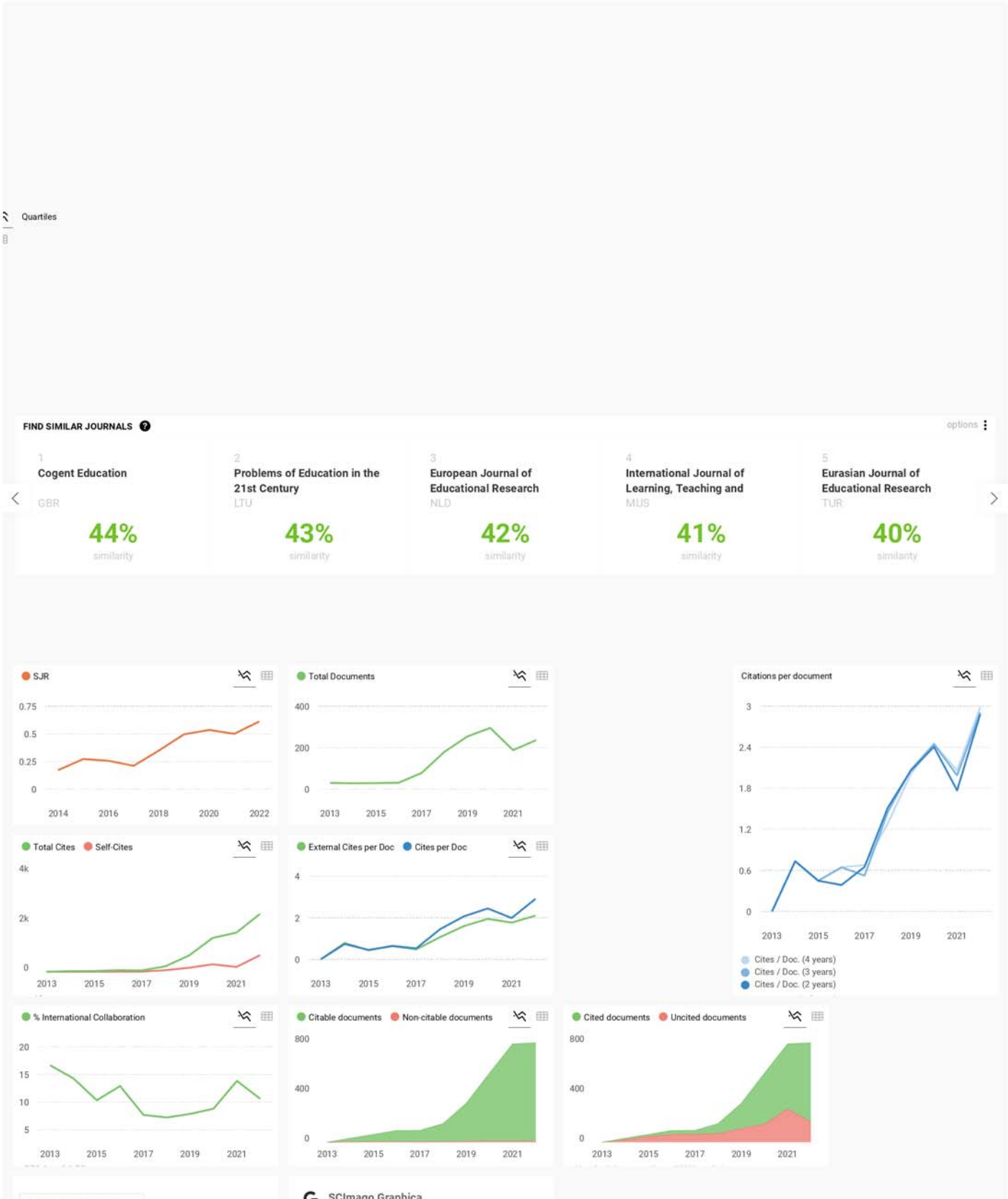
International Journal of Instruction

<p>COUNTRY</p> <p>Switzerland</p> <ul style="list-style-type: none"> Universities and research institutions in Switzerland Media Ranking in Switzerland 	<p>SUBJECT AREA AND CATEGORY</p> <p>Social Sciences Education</p>	<p>PUBLISHER</p> <p>Gate Association for Teaching and Education</p>	<p>H-INDEX</p> <p>32</p>
<p>PUBLICATION TYPE</p> <p>Journals</p>	<p>ISSN</p> <p>1694609X, 13081470</p>	<p>COVERAGE</p> <p>2013-2022</p>	<p>INFORMATION</p> <p>Homepage How to publish in this journal iji@ogu.edu.tr</p>

SCOPE

International Journal of Instruction is an internationally recognized journal in the field of education and is published four times a year (in January, April, July & October). The aim of this journal is to publish high quality studies in the areas of instruction, learning, teaching, curriculum development, learning environments, teacher education, educational technology, educational developments. Studies may relate to any age level - from infants to adults. IJI, being an international journal, our editorial advisory board members are from various countries around the world. The articles sent to the Journal are always reviewed by two members of the Editorial Advisory Board (double blind peer review), and in some cases, if necessary, by another member of the Board. Depending on the evaluation reports of the members of the Editorial Advisory Board, articles are published or not. Article evaluation process takes approximately three months. The authors are responsible for the errors, if any, in their published articles. The articles need to be not published elsewhere previously.

Join the conversation about this journal



← Show this widget in your own website

Just copy the code below and paste within your html code:

```
<a href="https://www.scimagojr.com" style="color: #007bff; text-decoration: none;">https://www.scimagojr.com
```

Explore, visually communicate and make sense of data with our [new data visualization tool](#).

Metrics based on Scopus® data as of April 2023


C **Carlinda Leite** 4 months ago

I, with colleagues involved in a project focused on youth participation in schools, are finishing an article. We would like to submit it to the International Journal of Instruction. Is it an issue interesting to the journal?

I will appreciate to have a response.

Carlinda Leite (Portugal, UPorto University)

[reply](#)

 **Melanie Ortiz** 4 months ago SCImago Team

Dear Carlinda,

Thank you for contacting us.

We are sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.

We suggest you visit the journal's homepage (See submission/author guidelines) or contact the journal's editorial staff, so they could inform you more deeply.

Best Regards, SCImago Team

H **Halimatussakdiah** 5 months ago

Dear SJR Team,

Best regards, I am Halimatussakdiah, a doctoral student at Sebelas Maret University, Surakarta, Indonesia. I want to ask the Scimago Team regarding Quartil in the "International Journal of Instruction", that the information in Scopus is in Q1 but in Scimago is in Q2, which is actually true.

SJR publishes Q2 rank for the International Journal of Instruction while officers of the journal advertise in their mails they are actually at Q1.


I have just checked Scopus rank and found this "The International Journal of Instruction" is now in Quartile 1. When will SCIMAGO update this?

Please confirm from the Scimago Team. Thank You

Thanks for your reply.

Halimatussakdiah

[reply](#)

 **Melanie Ortiz** 5 months ago SCImago Team

Dear Halimatussakdiah, Thank you for contacting us.

As you probably already know, our data come from Scopus, they annually send us an update of the data. This update is sent to us around April / May every year.

The calculation of the indicators is performed with the copy of the Scopus database provided to us annually. However, the methodology used concerning the distribution of Quartiles by Scopus is different from the one used by SCImago.

For every journal, the annual value of the SJR is integrated into the distribution of SJR values of all the subject categories to which the journal belongs. There are more than 300 subject categories. The position of each journal is different in any category and depends on the performance of the category, in general, and the journal, in particular. The distribution of Quartiles cannot be considered over the journals' total amount within a Category. In the case of SCImago, the distribution has to be considered with the formula Highest-SJR minus Lowest-SJR divided into four.

Best Regards,

SCImago Team