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Abstract

A growing number of children with intellectual disabilities attend inclusive schools in Indonesia. Previous research has suggested that teachers' type of school and experience influences their beliefs about inclusive education. This research collected questionnaire data from 267 Indonesian teachers and compared the responses from those working in inclusive, special and regular schools regarding their epistemological and pedagogical beliefs. The results showed that teachers in inclusive schools expressed stronger social constructivist beliefs than those in other schools. However, it was teachers' epistemological beliefs, rather than their type of school or experience, which were the significant predictor of their beliefs about inclusive education. The findings suggest that international epistemological research needs to have a more nuanced view of constructivist models of learning to better understand and inform how inclusive pedagogy is being enacted in different contexts.

Keywords

intellectual disabilities, inclusive education, Indonesia, epistemological, beliefs

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Introduction

Teachers' epistemological beliefs direct and reflect their classroom practice (Jordan and Stanovich, 2003; Knapp, 2016; Lee et al., 2013). The importance of these beliefs is acknowledged in the large body of research exploring teachers' epistemological beliefs in relation to particular curriculum areas (Yilmaz and Sahin, 2011), different cultures (Hofer, 2010) or specific classroom practices (Brownlee et al., 2012). While these beliefs are less influential in routine tasks, they become significant in situations where problems are relatively 'ill-structured' (Schraw et al. 1995), that is, involve complex everyday situations with the possibility for more than one response or solution. In these situations, individuals will reach different decisions and do different things as a result of their personal epistemological beliefs. One example of this type of problem solving concerns the classroom situations that teachers encounter in relation to inclusive education and pedagogy.

Inclusive education is a world-wide phenomenon that draws inspiration, and validation, from the Universal Declaration of Human Rights (Lindahl, 2006). It is underpinned by a consensus of moving towards 'education for all' (Heung and Grossman, 2007) where all children, including those labelled as having intellectual disabilities (IDs), have equal access to education with their peers. Policymakers have seen inclusive education as an initiative to address educational barriers for all learners (Budiyanto, 2011) and, consequently, teachers across the world have, by necessity, responded to their nations' inclusive education initiatives (Heung and Grossman, 2007).

Indonesia's inclusive education initiative began in 2003, with a government directive for each region to have at least four inclusive schools. Previously, schools could be categorized as either regular or special (Aprilia, 2017). Regular schools might accept pupils with a physical impairment, if they presented no behavioural problems and 'only if they have normal intelligence, have orientation and mobility' (Aprilia, 2017: 50). Children who did not meet these criteria might be taught in special schools 'Sekolah Luar Biasa', which typically catered for children within specific disability categories, such as blindness or deafness (Purbani, 2013). However, children's access to special schools has been seen as depending on the policy of individual school principals (Aprilia, 2017). The social stigmatization of children with IDs contributed to a situation in which many children with IDs did not have access to special school education (Tucker, 2013). The number of inclusive schools in Indonesia has grown since 2003, and they offer education for all pupils, including those who might previously have been excluded from education. Researchers examined 186 inclusive schools and found that 12% of pupils might be broadly categorized as having special educational needs; however, the vast majority (85%) of this group were children with IDs (Sunardi et al., 2011).

The inclusive education initiative is widespread, for example, 158 countries have adopted the United Nations Convention on the Rights of Persons with Disabilities, which explicitly commits countries to developing an inclusive education system (Rieser, 2014). However, the practice of inclusive education remains ill-defined and contentious, being enacted differently both between and within countries (Rix et al., 2013). Inclusive classroom pedagogy (as opposed to policy) remains an ill-structured problem for teachers to solve, resulting in a 'messy compromise' of approaches (Rix, 2015: 13) in a 'continuous struggle' of implementation (Allan, 2007: 101). Furthermore, little is known 'about the detail of [inclusive] practice at the classroom level' (Florian and Black-Hawkins, 2011: 814). It is within this context that teachers must make pedagogical decisions to accommodate pupil diversity within inclusive classrooms and, in doing so, are likely to be guided by their personal epistemological beliefs. Consequently, researching the relationship

between epistemological, pedagogical and inclusive beliefs is vital in order to understand the nature of inclusive pedagogies and how they are being constructed. Although an extensive body of international epistemological research exists, research in the context of inclusive education has been sparse. Even within this relatively small area, there is a tendency to foreground disability and difference, rather than inclusive pedagogy (Sheehy and Budiyanto, 2015). For example, studies have concentrated on examining teachers' beliefs about learners with specific category labels or impairments and their placement in mainstream settings (Martin, 2011; Murcia and Idárraga, 2013; Sermier Dessemontet et al., 2014) or how different subject specialists feel about teaching disabled pupils (Qi and Ching Ha, 2012). The few examples of research concerning inclusive education and epistemological beliefs often reflect this background, beginning from a basis of assessing beliefs about disabled learners or categories of disability (Jordan and Stanovich, 2003). Silverman identified that 'researchers have not examined the exact nature of the relationship between epistemological beliefs and attitudes toward inclusion' (Silverman, 2007: 43). Commonly, participants in epistemological research are students or pre-service teachers (Yilmaz and Sahin, 2011), teachers from special schools (Silverman, 2007) or within schools that are not accessible to all pupils (Lee et al., 2013). Research on the epistemological beliefs of classroom teachers in inclusive schools is lacking. In addition, the research may not differentiate between the *integration* of students with special educational needs as differentiated from the *inclusive education* of such students. For example, Silverman (2007) researched the beliefs of 71 pre-service general and special teachers towards inclusion, using a scale designed to assess beliefs about integration. This partly reflects the lack of an international definition of inclusive education, and terms such as integration or mainstreaming can be used to mean the same or different things (Rix et al., 2015). There is a need to research the epistemological beliefs of teachers in inclusive schools in relation to inclusive education.

In the context of this research, inclusive education is defined drawing on the United Nations Children's Fund (UNICEF) position in which children with special educational needs have a right to education that allows them to flourish alongside their peers in mainstream settings (UNICEF, 2012).

There also remains a paucity of studies concerning beliefs about inclusive pedagogy and how all children learn in inclusive classrooms (Florin and Black-Hawkins, 2011). A rare example of epistemological research in inclusive schools found that teachers' beliefs about the nature of pupils' disabilities and difficulties in learning (i.e. whether attributed to innate fixed factors or to contextual influences) influenced how they saw their own role within the class and their interactions with students (Jordan et al., 2010). A range of related studies (Jordan and Stanovich, 2003; Jordan et al., 2009) have explored and confirmed this relationship between beliefs about disability and the ways in which teachers engage with all learners in their classroom. In this research, teachers' beliefs about disability were characterized as either pathognomonic or interventionist (Jordan and Stanovich, 2003; Jordan et al., 2009; Jordan, 2013). Pathognomonic (*P*) beliefs regard disability as individualized 'pathological attribute of the learner' (Jordan, 2013: 10), whereas interventionist (*I*) beliefs frame disability in a way that is aligned with the social model of disability (Shakespeare, 2006). These beliefs impact on teachers' actions in the classroom, in relation to children with special educational needs. Those with *P* beliefs feel that teaching such students is the responsibility of other, specially trained, professionals (Jordan, 2013). In contrast, teachers with *I* beliefs see themselves as responsible for teaching all students in their class, believing that all students can learn 'irrespective of individual differences' (Jordan, 2013: 10). However, there remains both a need for larger scale research, informed by the existing

small scale qualitative studies, to explore teachers' epistemological beliefs in the context of inclusive education (Schwartz and Jordan, 2011), and also a consideration of conceptualizations of epistemological beliefs and inclusion that draws upon the broader field of educational epistemological beliefs research.

The types of epistemological beliefs that have been examined in educational research fall into two broad categories. The first, and largest, body of research is typified by Schommer's research, which developed the Epistemological Questionnaire (EQ) (Schommer, 1990). She found that participants' responses suggested four factors or dimensions: Simple Knowledge (knowledge as isolated facts vs. knowledge as integrated conceptions), Certain Knowledge (knowledge is certain vs. knowledge is tentative), Quick Learning (ranging from learning is quick (or not-at-all) vs. the speed of learning is gradual) and Innate Ability (ability to learn is genetically determined vs. the ability to learn is enhanced through experience). Schommer's EQ has influenced the development of much subsequent questionnaire-based research (Davies, 2012), including identifying cultural differences and similarities (Hofer, 2010). For example, Lee et al (2013) used the EQ (Schommer, 1990) in research with teachers in China to investigate the ways in which cultural factors might shape personal epistemological beliefs. Factors corresponding to Schommer's innate/fixed ability and certainty were extracted. However, a new factor was derived which represented 'authority/expert', that is, beliefs about the role of authority in transmitting knowledge. This factor has also emerged from research in Indonesia and Malaysia (Ismail et al., 2013; Liem and Bernardo, 2010). Findings such as these support the notion that there are cultural influences on the nature of epistemological beliefs and identify the need for epistemological research outside of the United States or European contexts.

A second category of research relates epistemological beliefs more closely to pedagogical theory and developmental psychology. For example, teachers' epistemological beliefs have been framed in terms of traditional or constructivist views of learning. The traditional conception sees teaching as a non-problematic transfer of untransformed knowledge from expert to student (Chan and Elliot, 2004). This contrasts with the constructivist conception in which knowledge is acquired through reasoning and where teaching facilitates the learning process, rather than directly transmitting knowledge (Lee et al., 2013). International comparative research has constructed similar distinctions. The Organisation for Economic Co-operation and Development (OECD) surveyed teachers across 23 countries using eight question items designed to tap beliefs in direct transmission (i.e. 'traditional') beliefs and constructivism (OECD, 2009).

The items related to direct transmission beliefs were

- Effective/good teachers demonstrate the correct way to solve a problem.
- Instruction should be built around problems with clear, correct answers, and around ideas that most students can grasp quickly.
- How much students learn depends on how much background knowledge they have – that is why teaching facts is so necessary.
- A quiet classroom is generally needed for effective learning. (OECD, 2009: 269)

The items related to constructivist beliefs were

- My role as a teacher is to facilitate students' own inquiry.
- Students learn best by finding solutions to problems on their own.

- Students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved.
- Thinking and reasoning processes are more important than specific curriculum content. (OECD, 2009: 269)

The findings of this research were from mainstream schools and omitted teachers who only taught 'special learning needs students' (OECD, 2009: 9). These schools are not synonymous with inclusive schools. For example, countries within the sample are likely to have well-developed special school systems or operate selective admission based on ability or other locally determined factors (OECD, 2009). The OECD research indicated that teachers in different cultures hold differing epistemological beliefs and consequently construct different representations of how children learn and what their role as a teacher might be (OECD, 2009). However, in terms of models of learning, this dichotomous approach may not be sufficiently nuanced to capture significant variations within and between cultures. For example, Sheehy and Budiyo (2015) carried out mixed methods research in inclusive schools in Indonesia and concluded that the teachers held broadly social constructivist (as distinct from Piagetian constructivist) beliefs. This distinction is particularly important in relation to inclusive pedagogy where social constructivist approaches appear to have significant benefits for all learners in inclusive classrooms (Sheehy et al., 2009; Mitchell, 2014). This distinction also has resonance with Jordan and colleagues' findings (Jordan, 2013; Schwartz and Jordan, 2011), which mapped *P-I* beliefs in relation to beliefs about ability and learning. In this mapping, the degree to which learning was seen as the result of a genetically fixed potential or environmentally mediated processes was an important issue. The latter perspective, which is consistent with a social constructivist epistemology, was proposed as underpinning practices supportive of inclusive educational practice in the classroom (Jordan, 2013).

This research aimed to address a gap in, and make an original contribution to, research concerning teachers' epistemological beliefs in relation to inclusive education and pedagogy. It aimed to examine teachers' beliefs about inclusive education and pedagogy and included questionnaire data from teachers working in inclusive schools. The questionnaire also sought to incorporate an epistemological research perspective which was broader in nature than the hitherto 'isolated' disability focussed research, which made a distinction between constructivist and social constructivist epistemological beliefs and which examined the beliefs of teachers who taught outside of a North American or European context.

Method

The dominant epistemological research method is self-report questionnaires (Schraw, 2000), and this approach meets the need for larger scale research into epistemological beliefs, inclusive education and pedagogy (Florian and Black-Hawkins, 2011; Silverman, 2007). A questionnaire (see Appendix 1) was developed which drew upon and extended existing questionnaire items. In keeping with ethical guidance (British Psychological Society, 2014) the research sought to avoid unnecessary data collection and use only questions that could be justified. The results of extensive research into the relationships between teachers' age, gender, years of teaching and their pedagogical beliefs are inconsistent (Sheehy and Budiyo, 2015). Jordan concludes that 'There is no evidence to date that differences in belief patterns are related to length of teaching experience, to class size or elementary school grade level' (Jordan, 2013: 11). Therefore, questions 1–4 asked about the 'teacher variables' (Avramidis and Norwich, 2002) most likely to influence beliefs

related to inclusive education and pedagogy: ¹ experience of teaching disabled children, contact with disabled people and occupation (Avramidis and Norwich, 2002; Ahmmed et al., 2012; Elhoweris and Alsheikh, 2006).

Questions (5–11) relating to models of learning (Constructivist, Social Constructivist and Behaviourist) and school placement (Q29–32) were taken from Sheehy and Budiyo's (2015) development of the Theoretical Orientation Scale (Hardman and Worthington, 2000).

All of the eight epistemological questions from the OECD international survey (OECD, 2009) were included. These examined traditional/direct transmission and Constructivist beliefs (questions 12–19)

Four questions drew on Lee et al.'s (2013) research, concerning innate/fixed ability, (Q20, Q21) and effort and process (Q22) and Certainty of Knowledge (Q23)

Happiness, of different types, has been indicated as a central part of Indonesian teachers' conceptualization of pedagogy (The Open University, 2016) and so questions regarding *Suka* and *Senang* were included. *Senang* refers to a relatively individualized happiness and *Suka* represents a ¹¹ “networked” emotion which is part of social interaction’ (The Open University, 2016).

Keyw² signing has been introduced to inclusive classrooms in Indonesia, to support pupils with IDs who might previously have been excluded from education (Sheehy and Budiyo, 2014). Research has identified that people's beliefs about the stigmatization of difference, in relation to children with IDs, can be elicited through their responses to questions about the use, and potential use, of manual signing (Bowles and Frizelle, 2016). The stigmatization of children whose behaviour or appearance makes them look different to their peers, for example, through signing (Sheehy and Duffy, 2009), is a major issue in inclusive education internationally (United Nations Children's Fund, 2012) and a particular issue in Indonesia (Heung and Grossman, 2007). This focus informed questions 37–40. The broad term ‘Special Educational Needs’ (SEN) was used in the English version, whereas the translated Indonesian term is closer ⁵ meaning to children with IDs.

Q32 concerns the underpinning belief of inclusive education that ‘All children have a right to education with their peers’ (UNICEF, 2012).

The questions were translated into Bahasa Indonesian and mixed together to create a hard copy questionnaire with a 5-point Likert response scale for all but the first four items (see Appendix 1). This translation was then discussed by a group of Indonesian teachers and translated back into English to explore and revise the clarity of the questions and their intended meanings. The research team comprised native Bahasa Indonesian and English language speakers.

The research followed the British Psychological Society ethical guidance (British Psychological Society, 2014) and was supported by the Ethics committee of the researchers' respective universities.

Participants

The questionnaire was distributed at a national teachers' conference in Surabaya, East Java, with teachers attending from across Indonesia. It was hoped that a substantial proportion of attendees would be from inclusive schools. Each questionnaire contained information about the project to support participants' informed consent. Participation was voluntary and teachers could choose to return their completed questionnaires to boxes placed in the conference foyer.

An estimated 420 teachers attended the conference, with 267 returning a completed questionnaire yielding an approximate return rate of 63.5%. The 267 respondents, including 19 student teachers, were divided between regular (36%), special (32%) and inclusive (32%) schools.

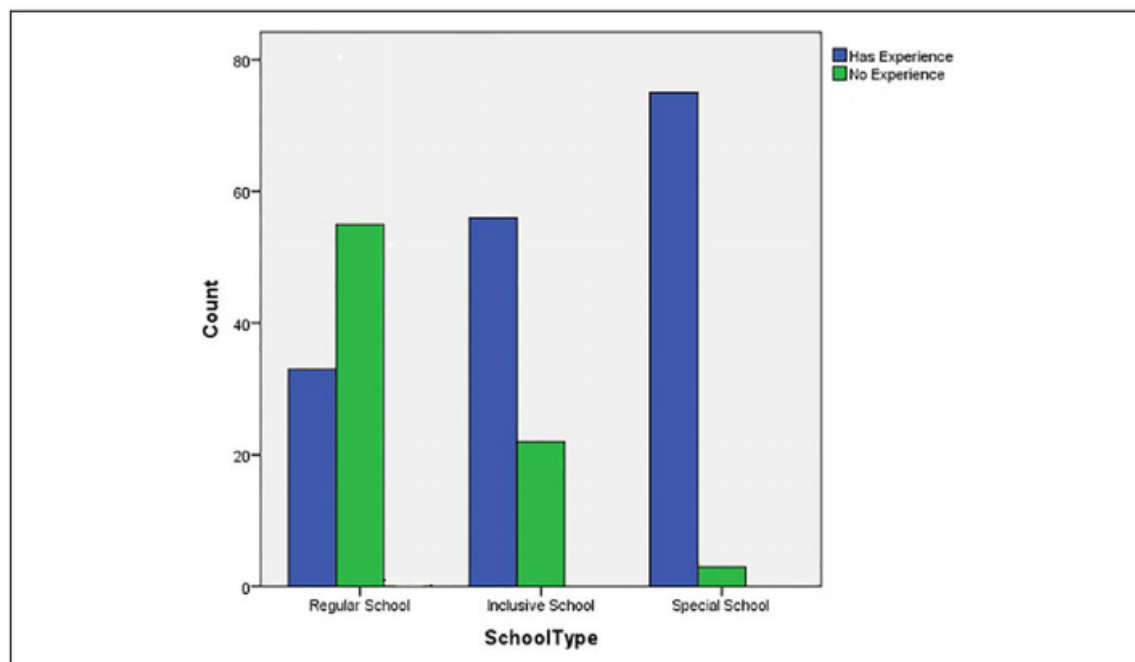


Figure 1. Participants' experience of teaching disabled children.

Results

As might be expected, illustrated in Figure 1, the participant's type of school was associated with significant differences in their experience of teaching disabled children ($p > 0.001$, $df = 4$, Pearson $\chi^2 = 67.275$). There was also a difference in their contact outside of school (see Figure 2; $p > 0.01$, $df = 4$, Pearson $\chi^2 = 17.6$)

1 Response analysis

27: data were reviewed with regard to conducting a principal components analysis (PCA). Bartlett's test of sphericity ($p > 0.001$) confirmed that the data were suitable for PCA. The sample of 267 exceeded the minimum size required (MacCallum and Widaman, 1999) and yielded a Kaiser–Meyer–Olkin (sampling adequacy) 3 score of 0.846 indicating that distinctive reliable factors could be extracted (Field et al., 2012). A PCA with Varimax rotation was carried 1 out. Ideally, each variable would be associated with a single component (De Laat et al., 2013) and, informed by a scree analysis, values below 0.35 were omitted. Four components were extracted each accounting for 23%, 7%, 7% and 5%, respectively, of the variance (see Table 1). The degree of variance explained is similar to, or larger than, that in other epistemological research, for example, Castéra and Clément (2012); Kurniawati et al. (2012); Maier et al., 2013).

Component 1: Children develop through a happy pedagogy with their peers 6

This component brings together a belief that 'All children have the right to an education with their peers' and items related to both constructivist and traditional beliefs. However, the components' negative relationship with 'average remains average' is consistent with an anti-essentialist belief in

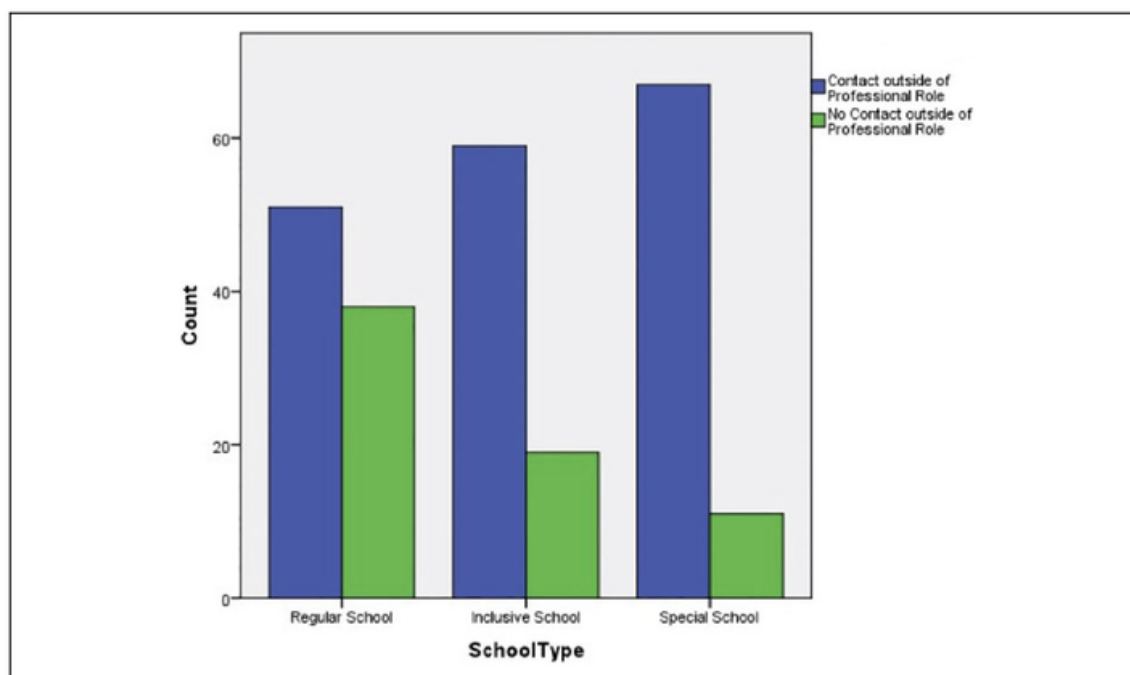


Figure 2. Participants' ¹ contact with disabled children outside of their professional role.

children's potential to develop through education. Strongly associated with these beliefs were the two items concerning happiness in pedagogy.

Component 2: Signing is a stigmatized marker of a fixed ability

Component 2 contains the belief that children's ability will not be changed by education (average remains average). Signing is stigmatizing, possibly because it would mark out an unchangeable difference. Signing is believed to have a detrimental impact on language development and should be used only by the non-speakers who need it. So those who need to sign are stigmatized.

Component 3: Segregated by intelligence for quiet one-method teaching

This component contains beliefs favouring the segregation of learners. All learners should be taught in classes according to their intelligence and those with special needs taught in special schools, with children having similar needs. There is a belief that all teachers can teach children with SEN, but that they require special training to do so. There is an associated belief in 'one method of teaching' which is linked to beliefs in the need for quiet classrooms in 'intelligence streamed' settings. The beliefs in the necessity of ²² quiet classroom, using a single teaching method for intellectually homogenous groups, require children with special educational needs to be grouped together outside of mainstream schools.

Component 4: Fixed ability and locational integration – The regular school signing class

This component reveals that a particular epistemological belief, that children's educational potential is fixed at birth, is associated with particular beliefs about how children should be taught.

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Table 1. Rotated component matrix.^a

	Component			
	1	2	3	4
Happy Senang	0.825			
Regular Teachers Special Training	0.795			
All Children Right to Education with Peers	0.781			
Happy Suka	0.775			
Learn via Collaboration	0.760			
Meaningful Learning Social Activities	0.703			
Think of Solutions Before Shown	0.694			
Problems Clear Correct Answers	0.666			
Find Solutions to Problems on Own	0.665			
Helping to Talk to One Another	0.585			
Facilitate Own Enquiry	0.558			
Thinking Reasoning Processes more important than content	0.540			0.367
Teachers Demonstrate Correct Way	0.534			
Teach Facts	0.524			
Social Production of Knowledge	0.512			
Signing Encourages Speech Some Children	0.489			
Learning Depends on Effort	0.443			
Good Teaching Mostly Teacher Talk	-0.397			
Signing Non Speakers Only		0.703		
Signing Stigmatizes		0.687		
Signing Detrimental to Language Development		0.567		
Average Remains Average	-0.364	0.483		
Only who Need it Sign		0.446		
SEN Specialist Setting Similar Needs			0.577	
SEN Special School			0.525	
My School Groups By Ability			0.512	
SEN Need Specialist Teachers			0.495	
All Teachers Capable SEN			0.487	
One Teaching Method			0.414	
Quiet Classroom Effective Learning			0.401	
Classes According to Intelligence			0.399	
SEN Special Class in Regular School				0.642
All Class Should Sign				0.429
Potential Fixed at Birth				0.359
Signs Easier than Spoken Words				

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^aExtraction method: principal component analysis; rotation method: Varimax with Kaiser normalization; SEN: Special Educational Needs.

Respondents who held a 'fixed ability' belief tended to also believe that children with special educational needs learn most effectively in a separate special class alongside children with similar disabilities. However, this special class could be within a regular school. The component does not contain a belief that signing stigmatizes children or is detrimental to language development. This may be why it is seen as something that is suitable for the whole class and also why the special class could be within a regular school.

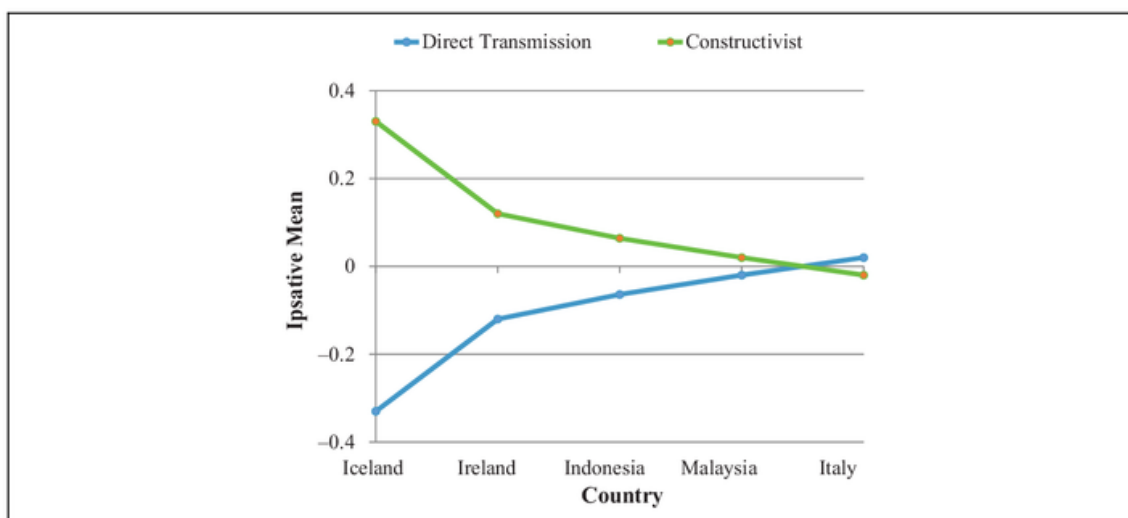


Figure 3. Ipsative means of direct transmission and constructivist questions from OECD (2009) and Indonesian sample.

International comparison

The inclusion of the eight OECD international survey questions (OECD, 2009) allowed a comparison to be made with this Indonesian sample. The OECD survey reported that the means of teaching beliefs were not directly comparable between countries but that the patterns of responses could be compared using ipsative scores (see OECD, 2009: 94). Ipsative means reveal the relative endorsement of traditional/direct transmission and constructivist beliefs. 'Positive score values indicate that one set of beliefs receives a relatively stronger support than the other' (OECD, 2009: 94). Ipsative means were calculated for the Indonesian data (direct transmission mean = -0.064 ; constructivist mean = 0.064), and Figure 3 plots these data alongside that from four exemplar countries from the OECD study.

This suggests a preference for constructivist beliefs in the Indonesian sample that is similar in degree to that found in Indonesia's neighbour Malaysia (OECD, 2009). The Indonesian sample supports the OECD's conclusion that teachers in some Asian countries may not differentiate greatly in their beliefs regarding direct transmission and constructivist teaching (OECD, 2009). A caveat to this support is that the Indonesian sample is much smaller ($n = 267$) than the OECD samples ($n > 4000$). In addition, the OECD and Indonesian (OECD, 2009) teacher samples overlapped, but did not directly match, in terms of the age ranges they taught. The OECD (2009) research sampled teachers of children of lower secondary age. This typically includes children of 10 years to 13 years of age (UNESCO Institute for Statistics, 2017). Teachers in the Indonesia sample included *Sekolah Dasar* (primary) and *Sekolah Menengah Pertama* (middle) teachers, who teach children between 6 and 14 years of age. Further data are needed to ascertain if the primary/middle subgroups influence this comparison. The OECD (2009) study sampled only regular schools, excluded special and explicitly inclusive schools and did not differentiate between social constructivist and constructivist beliefs. Analysis of the Indonesian sample indicates no significant differences among the three school groups regarding the OECD epistemological (constructivist and direct transmission) questions.

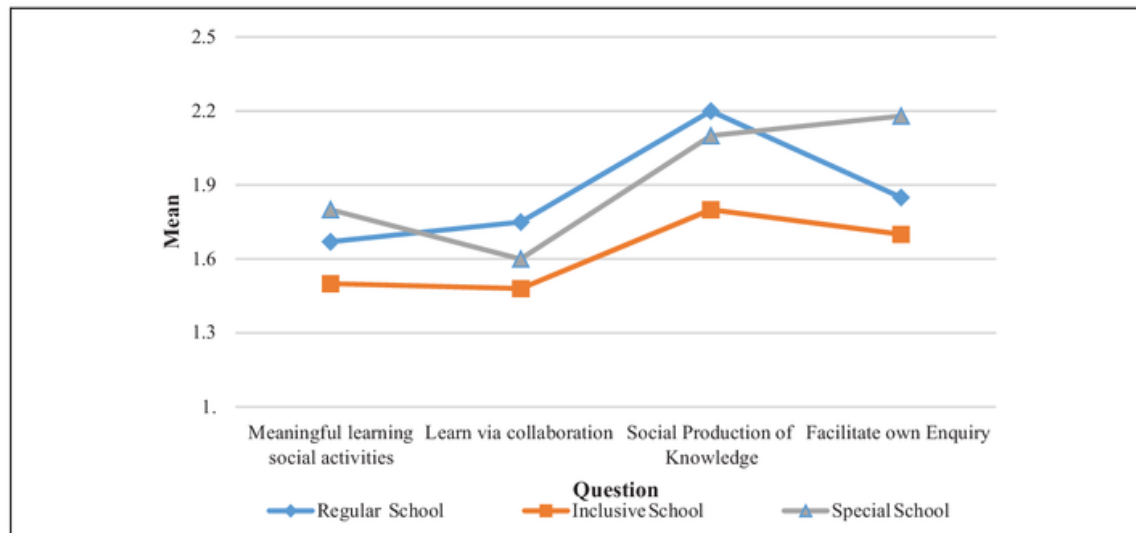


Figure 4. Participants' mean responses by school type to four items (1 = *strongly agree*/5 = *strongly disagree*).

However, significant differences existed among the school groups regarding social constructivist beliefs. Figure 4 shows the trend in responses to social constructivist items by school type.

Figure 4 illustrates that, overall, all the three groups of teachers responded positively to social constructivist statements. However, there are significant differences in the degree to which teachers agree or disagree for three questions: (meaningful learning social activities ($p = 0.012$, $\chi^2 = 8.77$, Kruskal–Wallis); social production of knowledge. ($p = 0.006$, $\chi^2 = 10.23$, Kruskal–Wallis); facilitate own enquiry ($p = 0.001$, $\chi^2 = 17.15$ Kruskal–Wallis). (The difference observed in the question concerning learn via collaboration narrowly failed to reach conventional levels of confidence ($p = 0.06$, Kruskal–Wallis)). The data suggest a trend in which teachers from inclusive schools agree more strongly than other teachers with items that reflect a social constructivist perspective. Examining these differences using pairwise comparisons (and controlling for type I errors) reveals significant differences between inclusive school teachers and special school teachers ($p = 0.01$) regarding 'Meaningful learning'. The inclusive school teachers also differ significantly from the special school ($p = 0.023$) and regular school teachers ($p = 0.012$) regarding the 'Social production of knowledge' item. The 'Facilitate own enquiry' item produced significant differences between the inclusive and special groups ($p = 0.001$) and the regular and special school groups ($p = 0.009$). There is also a significant difference between the three groups' beliefs concerning 'average remains average' ($p = 0.023$, $\chi^2 = 7.68$, Kruskal–Wallis) and that to learn effectively children must be happy (Senang) ($p < 0.05$, $\chi^2 = 5.98$, Kruskal–Wallis), with the inclusive school group agreeing most strongly with these items.

Post hoc analysis

Within epistemological research in different cultures, researchers typically follow an exploratory derivation of components with a multiple regression analysis, to assess their predictive value (Abedalaziz et al., 2013; Castéra and Clément, 2012; Samuel and Ogunkola, 2013). This approach uses the principal components as predictor variables (O'Rourke and Hatcher, 2013) and also the predictive value of individual questions.

Table 2. Stepwise regression of social construction beliefs as predictors of belief that 'All children have the right to education with their peers'.

Model summary				
Model	R	R ²	Adjusted R ²	Standard error of the estimate
1	0.638 ^a	0.407	0.393	0.71228

^aPredictors: (constant), SocialProductionofKnowledge, ThinkofSolutionsBeforeShown, HelpingtoTalktoOneAnother, MeaningfulLearningSocialActivities, Learn via Collaboration.

A regression analysis indicated that 60.1% of the variance in teachers responses to 'All children have a right to education with their peers' could be predicted from component 1 (minus the 'all children...' question itself) ($R = 0.775$; $R^2 = 60.1$). The corresponding analysis of variance (ANOVA) for this model is significant ($p < 0.001$). This indicates that a significant relationship exists between particular epistemological beliefs and a belief in inclusive education (as operationalized in the 'all children' question). The belief in 'All children...' was not predicted by type of school, experience or contact. This means that epistemological beliefs were more important than type of school or experience in relation to influencing a belief in inclusive education.

A stepwise regression indicated that teachers' social constructivist beliefs (four items) were particularly influential within the relationship between component 1 and the 'All children...' belief. Table 2 illustrates that the social constructivist beliefs predicted over 40% of the variance in the belief that all children have the right to education with their peers.

Regression analysis indicates that component 1 predicted 76.1% of the variance in teachers' beliefs about happiness (Senang) ($R = 0.872$; $R^2 = 0.761$). This is a significant effect (ANOVA, $p < 0.001$) indicating a relationship between epistemological beliefs, inclusion and Senang in Indonesian pedagogy.

Discussion

The findings of this research contribute to the research literature by indicating that teachers' epistemological beliefs are associated with their beliefs about inclusive education and inclusive pedagogy. It produces an original comparison between the beliefs of teachers from regular, special and inclusive schools. It also indicates that future international epistemological research needs to include a consideration of social constructivist beliefs and that social constructivist beliefs are important predictors of a belief that all children have a right to education with their peers. The research also supports the suggestion that notions of happiness are an important part of Indonesian pedagogy (The Open University, 2016), an issue which does not emerge from North American or European epistemological research examining inclusion.

Making a distinction between constructivist and social constructivist beliefs is important with regard to classroom pedagogy. Teachers with different epistemological beliefs teach their classes in correspondingly different ways (Wu and Rao, 2011), and this is a particular issue when teaching children who experience difficulties with learning. In essence, constructivist beliefs, although acknowledging the influence of peer-to-peer interaction, primarily see children creating knowledge on their own. This is an essentially Piagetian view (Yilmaz and Sahin, 2011). Practice derived from constructivist beliefs may position children with learning difficulties in situations in which teachers wait until they achieve a developmental readiness for being taught new concepts. In

contrast, social constructivist beliefs emphasize the way in which language and social interaction mediate and drive children's cognitive development (Lourenço, 2012). Furthermore, there is evidence from large-scale reviews that social constructivist-based practice can produce benefits for all learners in inclusive classes (Rix et al., 2009) and produce positive impacts on children's individual cognitive development and academic achievements (Littleton and Mercer, 2013). Omitting this distinction, as in the OECD research (Organisation for Economic Co-operation and Development [OCED], 2013; OECD, 2009), fails to acknowledge an epistemological difference that this research has shown to be significant for inclusive pedagogy and education.

The finding²² that teachers' epistemological beliefs, rather than type of school or experience, predict their beliefs in the concept of inclusive education, complements and extends the work of Jordan (2013).

This research provides evidence that if educators are aiming for a situation in which all children learn together with their peers, then not all epistemological beliefs are equally useful. This is a controversial proposition in several ways: First, it challenges a commonly held belief in a pedagogic eclecticism (Snider and Roehl, 2007). While different theories are useful pragmatically in teaching different children different things at different times (Mitchell, 2014), the current research indicates that not all epistemological beliefs are associated with a belief in inclusive education or support pedagogic decisions that work towards that goal. Secondly, it has been argued that inclusive classes require 'nothing special' and that inclusive education equates to good common practice (Rix, 2015). However, what teachers believe to be good practice is created by their personal epistemological beliefs, which as this study reveals are not uniform. Lastly, it suggests a new hypothesis in which the different constructions of inclusion in different cultures might reflect different underpinning epistemologies. This supports the view that different factors might emerge from epistemological research in different educational cultures (Chan and Elliott, 2004; Lee et al., 2013; OECD, 2009) but goes beyond this by indicating that inclusive pedagogies, constructed from these beliefs, may also differ cross culturally.

High-profile large-scale international research (OECD, 2009) has identified that teachers' area of greatest need is "Teaching special learning needs students" (OECD, 2009: 48) and makes recommendations for professional development on this basis. However, the results of the current study suggest that if research aims to understand and inform the development of inclusive educational practices, then researchers will need to make more fine-grained distinctions in the relationship between the epistemological beliefs and models of learning held by teachers.

Conclusions

The findings of this study indicate that teachers' epistemological beliefs merit further research within the field of special and inclusive education. Analysis of teachers' questionnaire responses shows that not only are particular epistemological beliefs associated with a belief that all children should be educated together but that these beliefs are significant predictors of the variance in this belief. More specifically, social constructivist beliefs are a significant predictor of this variance. This finding reveals a fundamental relationship between beliefs about how children learn and inclusive education, which needs to be foregrounded in international special and inclusive education research. This study moves beyond researching teacher beliefs about single categories of disabled children or attitudes towards inclusive education divorced from underpinning epistemological beliefs and models of how all children learn. It begins to meet a need for research that complements small qualitative studies and research with student and

special school teachers by making a comparative examination of the ³beliefs of teachers working in inclusive schools (Jordan et al., 2010; Silverman, 2007).

This research has shown that teachers' views about how learning occurs for all children is a significant predictor of the extent to which they believe that 'All children should be educated with their peers'. Additionally, it asserts that international research needs to consider social constructivist beliefs in order to develop a better understanding of how inclusive pedagogy is being created for children with IDs in different contexts.

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Appendix I

Beliefs about inclusion, teaching and epistemological issues questionnaire items (English translation)

- Q1. What is your current occupation?
- Q2. ¹ you work in a school what type of school is it?
- Q3. Do you have personal contact with disabled people outside of your professional role?
- Q4. ¹ do you have experience of teaching disabled children?
- Q5. Meaningful learning takes place when individuals are engaged in social activities.
- Q6. ¹ children learn best through collaborative activities.
- Q7. ¹ learning can be defined as the social production of knowledge.
- Q8. ¹ helping children to talk to one another in class productively is a good way of teaching.
- Q9. All teachers are capable of teaching children with special educational needs in their classes.
- Q10. Children with special educational needs learn most effectively in a specialist setting, alongside others who have similar needs.
- Q11. ⁴ children with special educational needs require specialist teachers.
- Q12. Effective/good teachers demonstrate the correct way to solve a problem.
- Q13. Teaching should be built around problems with clear, correct answers.
- Q14. ⁴ the teacher's role is to teach facts.
- Q15. ⁶ quiet classroom is generally needed for effective learning.
- Q16. Good teaching occurs ⁴ when there is mostly teacher talk in the classroom.
- Q17. The teacher's role is to facilitate students' own inquiry.
- Q18. Students learn best by finding solutions to problems on their own.
- Q19. Students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved.
- Q20. Thinking and reasoning process ²⁴ are more important than specific curriculum content.
- Q21. Students' educational potential is fixed at birth.
- Q22. ⁶ students who begin school with 'average' ability remain 'average' throughout school.
- Q23. How much students get from their learning depends mostly on their effort.
- Q24. ⁶ all students should be taught in classes according to their intelligence.
- Q25. I believe there should be a single teaching method applicable to all learning situations.
- Q26. ⁷ in my school, students are grouped according to different levels of academic ability.
- Q27. Children with special educational needs learn most effectively in a special class in a regular ⁷ school alongside children with similar needs.
- Q28. Children with special educational needs learn most effectively in a special school not in a regular school. ⁷
- Q29. Regular teachers need special training to teach children with special needs.
- Q30. All children have a right to education with their peers.
- Q31. To learn effectively children must be happy (Sunang).
- Q32. ³ to learn effectively children must be happy (Suka).
- Q33. Signs are easier to learn than spoken words.
- Q34. All members of a class should learn to sign.
- Q35. Signing encourages speech in some children.
- Q36. ³ only children who need to sign should learn to sign in a class.
- Q37. Signing is suitable for 'non-speakers' only.
- Q38. Signing stigmatizes children who use it.
- Q39. Signing is detrimental to language development.

Indonesian teachers' epistemological beliefs and inclusive education

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