An experimental study of using eduplay to enhance social competence among preschool students in Hong Kong

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Abstract

Parents in Hong Kong believe that play is harmful to children's studies and socio-emotional development. However, the term "eduplay" was firstly introduced in Rao's article (2009), a form of play-based education with "Chinese characteristics", captures the beliefs of teachers and parents about what should happen and occurs in Chinese early childhood settings (Rao & Li, 2009). The concept of "Playing to learn" is more accepted by the Chinese parents. The eduplay activities were designed to enhance children's social competency. A pre–post study was conducted to select 60 preschool students aged from three to five years. Thirty students were randomly assigned to the "experimental group" to receive 10 eduplay sessions, while the remaining 30 students were assigned to the "control group". The Child Behavior Checklist (CBCL) was distributed to the teachers before and after 10 eduplay sessions to assess children's social competence. An analysis of covariance (ANCOVA) was used to assess whether the subjects of the experimental group had reduced the internalizing problems more significantly than the subjects of the control group. Finally, students' social competence was significantly enhanced after 10 eduplay sessions. Suggestions were given to the school, teachers, and parents on how to apply eduplay in children's learning and classroom teaching.

Introduction

Play gives children a wonderful way to explore new ideas, to develop their skills, to work through anxiety or stress, and to entertain or calm themselves. However, parents in Hong Kong are enthusiastic in support of their children with their studies and they have high expectation for their children's academic success. Parents in Hong Kong believe that play is harmful to children's studies and socio-emotional development. Play in western literature indicated that it encouraged children's peer interaction, cooperation and frequent exchanges with positive effect, predicting good social skills and favorable peer ties (Gottman, Katz, & Hooven, 1996; Mize & Pettit, 1997). However, both parents and teachers in Hong Kong accepted the close relationship between play and learning and that play was a vehicle of learning. The

emphasis was on "playing to learn". The new term "eduplay" captures the beliefs of teachers and parents about what should happen and it occurs in Chinese early childhood settings (Rao & Li, 2009). Chinese teachers and parents will accept "learning through play" into the curricula.

Recent estimates indicate that between seven and ten percent of the population have difficulties with social interaction skills and may be considered socially incompetent (Hecht & Wittchen, 1988). Approximately one-fifth of the populations in epidemiological studies have been found to show loneliness, anxiety, and shyness (Segrin, 1998; Segrin & Flora, 2000). The estimated prevalence of internalizing problems, such as dependency, loneliness, and social withdrawal, was 11.4 percent among 1,598 primary school children in Hong Kong in 2008 (Siu, 2008). Parents in Hong Kong always complain about their children being too dependent and their shyness. Children's internalizing problems were significantly decreased when using play therapy and psychotherapy in Siu's study. However, both therapies could only be used by qualified play therapists and psychotherapists. The concept of eduplay was firstly introduced by Rao (2009), Chinese teacher and parents can learn about how play and education can be combined to reduce preschoolers' internalizing problems.

Therefore, the eduplay activities were introduced to reduce the internalizing problems among preschool students. Teachers give some instructional guidelines to children to enhance their social competence through eduplay activities (play with learning purposes). The instructional guidelines are comprised of play rules, common playful slogans, and logos. Twenty children aged from three to five years with internalizing problems from each kindergarten recommended by the preschool teachers, a total of 60 children from three kindergartens, were invited. Thirty of them were randomly selected in the experimental group to receive 10 eduplay activities, and the remaining thirty children were assigned to the control group. The control group at this phase serves as a comparison group. They would receive 10 eduplay activities in the next phase.

Literature review

What is play?

Play is difficult to define. The following definitions offer some ideas of what play is:

"Defining and articulating play are far from easy for at least two different reasons. First, play is abstract and fluid; it is not a concrete object, place of action … A second reason that play is problematic is its multiplicity of meanings. Play, like love, is a many-splendored thing" (Johnson, Christie & Wardle, 2005, p.11).

"Adults are instrumental in choosing the objects with which children work and play, their comparisons in learning and exploration, and the circumstances of their participations in activities" (Rogoff & Wertsch, 2003, p.43).

During a symposium at Yale University (PLAY = LEARNING, June, 2005), respected researchers in the field of play were asked to define play. Some responses included these thoughts:

"Play is relevant and meaningful. Play has many dispositions" (James Christie, Arizona State University).

"It is learningful play" (Herbert Ginsburg, Columbia University).

"Play, learn and discover" (Deborah Weber, Fisher–Price, Inc.).

Honig (2007) defined play in her article "Play: Ten Power Boosts for Children's Early Learning". Two power boosts in her definition are "Children gain powerful knowledge and useful social skills through play" and "Peer play promotes social skills". Play not only enhances academic competence but also social competence.

Play as defined in the above citations was meaningful, relevant, and powerful channel of learning. Learning through play could not only happen in cognitive competence but also in social competence. However, the Chinese attitudes to play were somewhat different from the Western literatures. They believed that play is harmful to children's studies and socio-emotional development, especially in ancient Chinese literature, which is still deep-rooted in some Chinese teachers and parents.

Play is also defined and described as multi-dimensional, when seen through the eyes of Jean Piaget and Lev Vygotsky.

Chinese attitudes to play

The image of the neo-Confucian idealized child prodigy was often characterized by a distinct dislike of play. A precocious child also had a sedate appearance, which was expressed as 'young but mature', a quality that was highly respected in the Confucian images of a proper child.

This 'dislike of play' quality in the exemplary children presented in primers virtually established a norm to guide children's behavior through education.

Wan 玩 today indeed denotes playing, especially that of children, but in literary Chinese usually means the aimless or even absent-minded handling of some object or affair, not too far from its homonym *wan* 頑 which means thoughtfulness in a more literal sense, namely being dense, stupid, stubborn. Wan is not a positive term for play but rather denotes the absence of purpose in any kind of action.

The most common and general word for play in use today, *youxi* 遊戲, literally meaning 'play' in classical usage. *You* 遊 is a good match for the German word for play, Spiel, which also denotes free movement within certain boundaries.

Most Confucian educators were worried that play and a playful environment would divert children's attention from serious study; but some liberal scholars, such as Wang Yangming, saw the usefulness and necessity of using sober and educational play to regulate and mold children.

It has been difficult for practitioners to fully adopt the ideas advocated in the regulations due to inconsistencies between the philosophies outlined in the regulations and powerful and deep-rooted cultural beliefs about learning (Wang & Mao, 1996; Zhu and Wang, 2005). For example, the regulations emphasized play over formal instruction and recommended that a harmonious democratic relationship between the teacher and the child be established (Li, 2005).

This is not consistent with the traditional idea of obeying the teacher without arguing, and the Confucian view that learning is beneficial to human development but play is not.

It appears that traditional cultural beliefs about learning in China have taken a back seat to what is considered as good educational practice (Rao, Cheng, & Narain, 2003). The emphasis was on "playing to learn". Li (2005) has suggested that early childhood educators and tried to keep a minimal and appropriate balance between education and play in planning the curricula.

The relationship between play and learning was very close for both teachers and parents. The term "eduplay" captures the beliefs of teachers and parents about what learning could happen through play. Therefore, eduplay, a form of play-based education with "Chinese characteristics", was suggested to enhance not only academic competence but also social competence.

Social competence

Social competence is defined as when "children exhibit a positive demeanor around or toward others, have accurate social information processing abilities, and display social behavior that lead them to be well liked by others" (Frost, Wortham, & Reifel, 2008).

Social competence is also an ability to take another's perspective concerning a situation and to learn from past experience and apply that learning to the ever-changing social landscape. The ability to respond flexibly and appropriately defines a person's ability to handle the social challenges that are presented to us all.

The concept of social competence frequently encompasses additional constructs such as social skills, social communication, and interpersonal communication. Social skills assume that these are behaviors that are repeatable and goal-directed (Spitzberg, 2003).

Maladaptive behaviors and social competence

Both internalizing and externalizing behavioral difficulties have been associated with problems in social competence. Problems with sadness, anxiety, aggression, and conduct in childhood and continuing into adolescence have been found to be predictive of difficulties with social competence in adolescence (Williams & McGee, 1991).

Externalizing behaviors, which are behaviors that include aggression, bullying, threats, and rules breaking, may also be more likely to be considered problematic from a teacher's standpoint since these behaviors often disrupt the flow of instruction. Conversely, internalizing behaviors, which are focused inwards, such as withdrawing from interactions with others, are less likely to be noticed by a teacher (Merrell, 2008).

Social withdrawal has also been linked to problems with social competence. Rubin et al. (1995) found in a longitudinal study that children who were high on measures of social withdrawal had difficulties with loneliness and low self-esteem while those high on measures of aggression showed poorer social competence.

Play and social competence

Play helps the very young child gain a sense of competence and in turn supports development of a healthy self-concept. Children often express pride in accomplishments when they play in purposeful and meaningful ways (Swartz, 2005).

Through play, a child develops cognitively (the brain), physically (the body; its muscles and systems) and socially (emotionally and interpersonally) (Kentel, 2007).

Numerous studies (Swartz, 2005; Kentel, 2007) indicated that play helps children promote social competence and feel accomplishments. Therapeutic plays were also useful to reduce both children's internationalizing and externalizing problems (Siu, 2008). However, only people with professional training in psychotherapy could provide the therapeutic plays to children with behavioral problems. Eduplay, a form of play-based education with Chinese characteristics, is accepted by both teachers and parents as the close relationship between play and learning and that play was a vehicle of learning, and easy to understand and carry out in Chinese preschools settings. Therefore, eduplay activities were introduced to reduce children's internalizing problems in the present study.

Method

Setting

Three kindergartens located in different areas of Hong Kong were invited to

participate the study.

Subjects

For Phase One, a pre–post study from September 2008 to December 2008, 20 children aged from three to five years with either internalizing problems or externalizing problems from each kindergarten, recommended by the preschool teachers, in a total of 60 children from three kindergartens, were invited. Thirty of them were randomly selected in the experimental group receiving 10 eduplay activities, and the remaining thirty children were assigned to the control group. The control group at this phase served as a comparison group.

For Phase Two, from January to April 2009, children in the control group received 10 eduplay activities for enhancing their social competency/reducing internalizing problems.

Trainers

Two final-year early childhood education students and investigator were the facilitators of eduplay activities.

Materials

The parent and teacher version of the Child Behavior Checklist (CBCL) (Achenbach, 1978; Achenbach & Edelbrock, 1979; Edelbrock & Achenbach, 1984) was distributed to the parents and teachers before and after 10 eduplay activities to assess children's social competence (both internalizing and externalizing problems). *Child Behavior Checklist – CBCL*. Excellent reliability has been reported for the parent version of the CBCL. The CBCL is undoubtedly one of the most well-developed, empirically derived rating scales currently available for the behavioral assessment of children. The high reliabilities of the Chinese CBCL were reported, from 0.76 to 0.84, for the subscales in Leung et al.'s study (2006). The criterion-related validities for the subscales were from 0.66 to 0.96. The CBCL has been widely used among psychologists to identify children's behavioral and emotional problems in Hong Kong. It is also used to identify the first two serious behavioral problems among the subjects.

Teachers rated "2" if the item was "very true or often true" of their students, "1" if the item was "somewhat or sometimes true", or "0" if the item was not true. There are altogether 113 items describing children's internalizing and externalizing problems.

Eduplay recording booklet. A booklet was used to keep a record to see whether

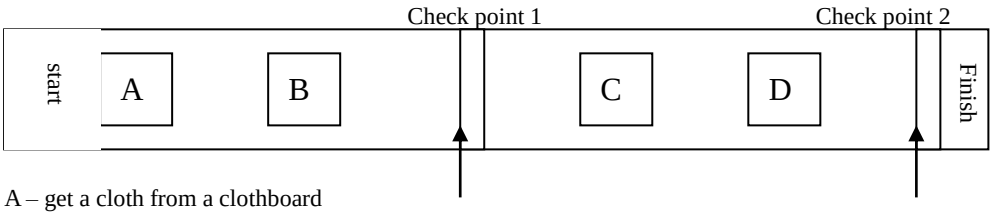
the identified problems had been reduced in class and at home.

Design and procedure

Phase one study. The first five eduplay activities dealt with children's two most serious behavioral problems. Both teachers and parents were asked to complete the CBCL for the subjects of both experimental group and control group before 10 eduplay sessions.

Students were divided into two groups, each group comprised of 5 children aged from 3 to 5. They were told to complete the tasks without any assistance. There was no time limit. Each task was split into two to three small steps. For example, the first eduplay activity was "Dressing up" and "Clothes packing up", below is the illustration of eduplay activity one.

Figure 1. Eduplay Activity One



A – get a cloth from a clothboard

B – put on a cloth

C – put off a cloth

D – pack up a cloth

Complete the task, shout a slogan loudly, and receive a logo.

Children were instructed to go to the Station A to get a cloth from a clothboard, then they went to the Station B to put on a cloth with verbal instructions (like put on the left sleeve first then right sleeve, finally check whether it was put on properly). At last they went to the checkpoint1 to shout a slogan loudly and receive a logo. They would follow the same procedure to finish task 2 "Clothes packing up". Three important things were considered when designing the eduplay activity, 1). clear verbal instructions to complete a task, 2). a meaningful slogan to children (usually from Japanese cartoons), 3). a logo made by children.

Step 1: Facilitators discussed the slogan and logo, and the tasks with children, and they promised to finish the tasks without any assistance, like dressing up, buttoning, face and hand washing, clothes packing up, and having meals themselves.

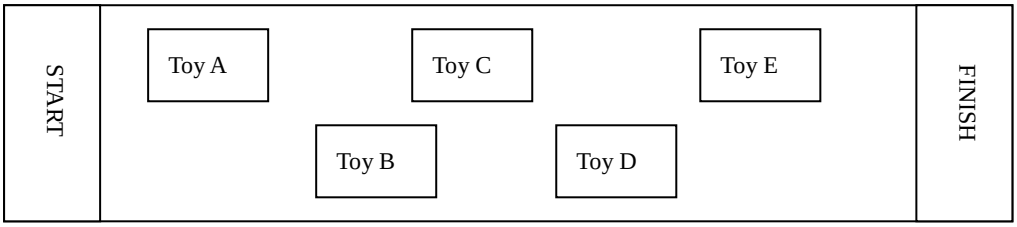
Step 2: Once they decided the slogan and logo, they were asked to make the logo themselves.

Step 3: When they finished the task, they could shout the slogan loudly and get a logo.

Step 4: They can save the logos for obtaining more energy in their power pad book.

Step 5: Children could get the logos from teachers in school or from parents at home; they could lose the energy if they could not finish the tasks in school or at home.

Activities 6 to 10: These were dealing with children's "demands met immediately"/"wait until teacher's response". Steps 1 to 5 were repeated, but the slogan, logos, and the tasks were different. Below is the illustration of eduplay activity 6.



Again, children were divided into two groups, each group comprised of 5 children aged from 3 to 5. Facilitators discussed the slogans for the toys and logo with children. Different slogan would represent for different toys. For example, slogan A "big big ball la" stood for toy A, slogan B "big tummy bear ar" stood for toy B. Children would ask the facilitators loudly and politely, what toy they would get first ? They should listen to facilitator's slogan carefully in order to get the right toy.

Subjects of both groups were asked to complete the CBCL again after 10 sessions of eduplay.

Phase two study. Step 1 to step 5 were repeated for the remaining 30 students in the control group to reduce their two most serious behavioral problems. Subjects of the control group were also asked to complete the CBCL again after 10 sessions of eduplay.

Results

Part I

Teachers were asked to complete the CBCL for the sixty subjects before all eduplay sessions. The means of the first five serious problems are listed below.

Table 1

Means of the First Five Serious Behavioral Problems (N=60)

Item		Mean
11	Clings to adults or too dependent	1.78
19	Demands a lot of attention	1.45

23	Disobedient at school	0.84
75	Shy or timid	0.76
69	Selfish or won't share	0.70

Note. 0 = Not true (as far as you know), 1 = Somewhat or Sometimes True, 2 = Very True or Often True.

The first two items were significantly higher than the remaining items. They were also close to 2 "very true or often true". The present study decided to reduce the first two serious problems, both were internalizing problems.

Reliabilities of CBCL. The reliabilities of CBCL of the present study ranged from 0.70 to 0.82 (see Table 2). The range of reliabilities is similar to Leung et al.'s study (2006), from 0.76 to 0.84.

Table 2

Reliabilities of CBCL of the Present Study (Cronbach alpha)

Pre-test (09/2008)	Post-test (12/2008)	Post-test1 (04/2009)
N = 60	N = 60	N = 30
0.76	0.82	0.70

Part II

Due to the small sample size, usually less than 100 cases, data screening was considered to examine the normality of the data (Tabachnick & Fidell, 2007).

An analysis of covariance (ANCOVA) was conducted to test the significance of the difference between the experimental group and the control group on the adjusted post-test means for each hypothesis. In each case the post-test specified in each of the hypotheses was used as the dependent variable and the pre-test as the covariant.

The ANCOVA was used to adjust the group means on the post-test on the basis of the pre-test, thus statistically equating the control and experimental groups. Significance of difference between means was tested at the .05 level. On the basis of the ANCOVA, the hypotheses were either retained or rejected. Effect size was measured by eta-squared.

The appropriateness of the use of covariance was determined by ensuring that there were no significant correlations among the dependent measures (Stevens, 2002; Dancy & Reidy, 2004).

Normality of the data

Skewness and kurtosis were used to examine the normality of the data; all the data were ranged from -0.64 to 0.81. The data were considered to be normally distributed, whereas some statisticians suggest a threshold of ±1 as indicative of

departure from normality (George & Mallery, 2003; Morgan, Griego, & Gloeckner, 2001).

Internalizing problems were reduced significantly more in the experimental group (when controlling for pre-test scores) than in the control group

An analysis of covariance was used to assess whether the subjects of the experimental group had reduced the internalizing problems more significantly than the subjects of the control group. Results indicated that after controlling the scores of pre-test, there was a significant difference between the experimental group and the control group on reducing two internalizing problems, $F_{\text{Clings to adults}}(1, 57) = 10.78$, $p < .01$; $F_{\text{Demands a lot of attention}}(1, 57) = 11.25$, $p < .01$ (See Table 4). Table 3 presents the means and standard deviations for both groups on reducing two internalizing problems, before and after controlling for the scores of pre-test.

Table 3

Adjusted and Unadjusted Group Means and Variability for Reducing Two Internalizing Problems Using the Scores of Pre-test as a Covariate

	Clings to adults or too dependent				
	Unadjusted			Adjusted	
	N	*M*	*SD*	*M*	*SE*
Experimental Gr.	30	0.71	0.22	0.44	0.31
Control Gr.	30	1.58	0.32	1.41	0.28
	Demands a lot of attention				
	Unadjusted			Adjusted	
	N	*M*	*SD*	*M*	*SE*
Experimental Gr.	30	0.62	0.18	0.38	0.33
Control Gr.	30	1.62	0.27	1.36	0.35

Table 4

Analysis of Covariance for Reducing Internalizing Problems Using the Scores of Pre-test as a Covariate

		Clings to adults or too dependent			
Source	*df*	*MS*	*F*	*P*	*eta*^{2}
Pre-test scores	1	756.21	74.72	<.001	0.66
Groups	1	109.09	10.78	<.01	0.51
Error	57	10.12			
		Demands a lot of attention			
Source	*df*	*MS*	*F*	*P*	*eta*^{2}
Pre-test scores	1	657.45	79.88	<.001	0.62
Groups	1	92.59	11.25	<.01	0.58
Error	57	8.23			

In Table 4, the scores of pre-test of two internalizing problems are the significant covariates in the ANCOVA, $F_{\text{Clings to adults or too dependent}}$ (1, 57) = 74.72, p<.001, eta^2 = 0.66, and $F_{\text{Demands a lot of attention}}$ (1,57) = 79.88, p<.001 eta^2 = 0.62. The results of the experimental group after taking 10 eduplay sessions where pre-test scores taken as covariate indicated that $F_{\text{Clings to adults or too dependent}}$ (1, 57) = 10.78, p<.01, eta^2 = 0.51, and $F_{\text{Demands a lot of attention}}$ (1,57) = 11.25, p<.01 eta^2 = 0.58. Therefore, the eduplay sessions have significant medium effect on reducing two internalizing problems.

Do the subjects of the control group reduce significantly after taking 10 eduplay sessions?

Paired samples t-test was used to test the difference of two internalizing problems between before taking and after taking 10 eduplay sessions.

Table 5

Paired Samples t-test for Reducing Internalizing Problems After Taking 10 Eduplay Sessions in the Control Group

	Clings to adults or too dependent			
	N	*M*	*t*	*p*
Before taking eduplay	30	1.60	128.07	<.001
After taking eduplay	30	0.52		
	Demands a lot of attention			
	N	*M*	*t*	*p*
Before taking eduplay	30	1.32	107.57	<.001
After taking eduplay	30	0.82		

In Table 5, the results of paired samples t-test showed that $t_{\text{Clings to adults or too dependent}} = 128.07$, $p < .001$, and $t_{\text{Demands a lot of attention}} = 107.57$, $p < .001$, the eduplay sessions could significantly reduce two internalizing problems in the control group.

Discussion

Research implications

Play is culturally specific: Eduplay play in Chinese kindergarten. The two most frequent internalizing problems were dependency and attention demanding. The results are similar to Siu's study (2008) of 11.4 percent among 1,598 primary school children having internalizing problems, such as dependency, loneliness, and social withdrawal. The two internalizing problems have been significantly reduced. Students in both groups have learnt self-care skills (dressing up, buttoning, face and hand washing, clothes packing up, and having meals themselves) through play slogan (instructions) and logos created by children. Play was viewed as an instructional tool for maximizing direct teaching (Pramling-Samuelsson & Fleer, 2009). The concept of "playing to learn" is imprinted in children's daily life. They learn the skills more easily when playing with instructions. The relationship between play and learning is not only accepted by both teachers and parents, but also by the children themselves. This is consistent with the concept of "eduplay" suggested by Rao & Li (2009), a

form of play-based education with “Chinese characteristics” in Hong Kong kindergartens.

Enhancing social competence. Social competence of children is enhanced for they become less dependent at home. They could do dressing, hand washing, and having meals themselves without caregiver’s assistance. They were willing to transfer what they learn from eduplay activities in school to the household. Social competence is an ability to learn from past experience and apply that to another situation (Spitzberg, 2003). A systematic and sensible recording system (power padbook) to align with the eduplay activities was used to consolidate the learned skills. Every time a child completed the task, they shouted out a “slogan” they designed. A logo also designed by the child was recorded in their personal padbooks. The more logos they got in their padbook, the more energy they had to become a “superboy” or “supergirl”. Both parents and teachers could keep the padbook and give logos to the child once they had completed the task individually. The eduplay could help them gain a sense of competence. They also expressed pride in accomplishments (“superboy” or supergirl”) when they played in meaningful ways (Swartz, 2005) with clear direct instructions.

Not only were the two internalizing problems (e.g., too dependent and demands a lot of attention) reduced significantly, but also more confident and less ego-centered children were also reported after 10 eduplay sessions. They become well-liked by others. This is also consistent with lots of literature (Rubin, et al., 1995; Spitzberg, 2003; Frost, Worthham, & Reifel, 2008) saying that social competence also includes additional constructs such as social skills, social communication, and interpersonal communication. An unexpected chain effect of reducing the two internalizing problems will lead to the increase of confidence and social skills.

Eduplay as assimilation and a zone of proximal development. Eduplay is essentially assimilation (action on objects). Children learnt to be socially independent through eduplay activities, such as buttoning, hand washing, putting on clothing and so forth. A continuation of accommodation (Piaget, 1962) is reported as children could repeat their learned skills at home. When children were in a group designing the slogan and competing for the challenge, the more competent peers could effectively scaffold other children’s learning, and helping them achieve a higher level of dexterity in actions, such as buttoning, that they had ever accomplished prior to the eduplay sessions. The concept of eduplay comprises both play-development relationship and instruction–development relationship. This is what Vygotsky referred to as the play–development relationship and it is similar to instruction–development (Vygotsky, 1966).

Hints for educating young children. There are two major elements found in the eduplay activities, (1) clear instructions with goal-directed behavior and (2) powerful and meaningful reinforcers. Students' goal-directed behavior was guided by clear strategic instructions, like finishing different tasks such as buttoning, putting on clothes, and tooth brushing, in eduplay activities. Once they completed all the tasks, they would have been reinforced by their designed slogan and logo. When they got more logos, they became more powerful as a superboy or supergirl. The implication is that when we teach our students, clear instructions and meaningful reinforcers to children are important to motivate and guide students to learn. It is more effective if we can deliver them through play, especially in teaching them social competence.

Gaining more friendship and elevating higher status. They were too dependent and demanding for attention before taking part in eduplay activities. They became more independent and self-regulated after the eduplay activities. They found themselves as capable as a superboy or supergirl. This promotes friendship among peers, and elevates their status within the group.

Suggestions

Extend the functions of eduplay. Eduplay is not only used to enhance children's social competence; the application of eduplay could also be extended to develop children's problem solving and pro-social behavior. When designing eduplay activities, both teachers and parents have to set clear instructions and let children decide the reinforcers and co-opted rules.

School. Li (2006) reported that the daily schedule of most preschools in Hong Kong consisted of seven major sessions – assembly, class teaching (carpet time), group activity time, tea break, music and physical movement, and pack-away time. The content of class teaching focused on general studies such as the Four Seasons, Health and Food, Festivals, Home Safety, and Transport while group activity/class work time was devoted to language, mathematics and craft work. It is suggested that we could involve some eduplay activities in class teaching and group activity time to enhance children's social competency rather than merely factual knowledge learning.

Teachers. Li's study (2003) indicated that the teacher's perception of student learning only focused on the achievement of academic works, such as "children would give correct answers to the questions" and "how many vocabulary words they have learned in class". No teachers mentioned student learning about social and moral

behavior or about the children's enjoyment of the day. The present study gives teachers a broader and holistic view of student learning, through which students can learn to be more socially competent through play. Numerous studies (Berk & Winsler, 1995; Pollock & Ford, 2009; Shiller & O'Flynn, 2008) indicate that a socially competent student can learn more effectively in class. Teachers are advised to design some learning activities with clear instructions and powerful reinforcers in class.

Parents. The present study indicated that "eduplay" captures the beliefs of parents about what should happen and occurs in Chinese early childhood settings. The emphasis was on "playing to learn". It is suggested that the eduplay ideas and skills are promoted among parents to enhance parent–child relationships and social learning. This is also a good idea: to develop a parents' eduplay network to share ideas and experiences in eduplay activities.

Limitations of study

Limited space of the eduplay activities. The class size ranged from 9 to 32 children. Crowding inside some classrooms was evident and was resolved by use of the corridors, lobbies or hallways for teaching and learning purposes (Li, 2006). Therefore, some eduplay activities were implemented in the lobbies and even in the corridors. They were sometimes disturbed by the settings, for example, having limited space for movements.

Traditional belief of play among teachers. When asking teachers to arrange students with internalizing problems for the eduplay activities, they all worried that this would influence students' learning in school. They thought that the students could not concentrate on their academic work after eduplay activities.

Suggestions for future study

Teacher and parental involvement in eduplay activities. Future study is suggested to investigate the involvement of teachers and parents in designing and implementing the eduplay activities. This will also enhance teacher–student and parent–child relationships through the discussion of slogans, rules, and logos with children.

Eduplay activities extended to academic work. The emphasis on "playing to learn" is not only applied to reduce children's behavioral and emotional problems, but it is also applied in children's learning. It is noteworthy whether future study can extend the eduplay activities in academic works, like writing and calculation. Play can be viewed as an instructional tool for maximizing direct teaching.

Conclusion

Play is culturally specific. Eduplay is a form of play-based education with "Chinese characteristics". Students in the present study have learnt to be more independent through eduplay activities with clear instructions and meaningful reinforcers. This helps children to make meaning out of their experiences. Eduplay acts as assimilation and zone of proximal development in learning. Therefore, the application of eduplay is also needed to further investigate Chinese early childhood settings.

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