



RIECU: The early childhood education-centre for teachers-university Network. Analysis of children's learning achievements through the project approach.

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ABSTRACT: This paper presents a research-action project carried out in 2012/13 in relation to the Early Childhood Education-Centre for Teachers-University Network. This network has been constructed to collaboratively research the Project Approach (hereinafter, PA) in Early Childhood Education classrooms. It is made up of teachers and pupils of Early Childhood Education, an adviser from the Continuing Professional Development Centre for Teachers, university researchers, and undergraduate students. The total number of people involved in the RIECU network is 538.

From a qualitative paradigm, this work aims at analysing the learning outcomes achieved by the children through their participation in the RIECU network, based on the opinions expressed by the teachers, the families, the adviser, the researchers, and the undergraduate students. Semi-structured interviews, a focus group, and research journals were used to compile information. The most relevant results were: (1) the children obtain benefits by using the PA as a means of approaching knowledge; and (2) they acquire new attitudes towards knowledge, such as initiative, self-assurance, and responsibility.

Keywords: early childhood education, communities of practice, project approach, knowledge development, teaching practice.

RIECU: Red de Infantil Escuela-Centro de Profesorado-Universidad. Análisis del aprendizaje de los niños a través del método de proyectos

RESUMEN: Se presenta un proceso de investigación-acción realizado en 2012/13 sobre la Red de Infantil Escuela-Centro de Formación del Profesorado-Universidad. Esta red se construye para investigar colaborativamente el método de Proyectos de Trabajo (en adelante, PT) en las aulas infantiles. Está integrada por maestras y niños de infantil, asesora del centro de profesorado, investigadoras y estudiantes. Participan en RIECU 538 personas.

Desde un paradigma cualitativo se han analizado los aprendizajes de los niños al participar en RIECU, según la opinión manifestada por las maestras, las familias, la asesora, las investigadoras y los estudiantes. Se ha utilizado la entrevista semiestructurada, el focus group y los diarios de investigación para recabar información. Los hallazgos más relevantes se refieren a: (1) los niños de infantil obtienen beneficios al utilizar los PT como enfoque de investigación para aproximarse al conocimiento y (2) adquieren nuevas actitudes frente al saber, como

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iniciativa, seguridad y responsabilidad.

Palabras clave: educación infantil, comunidad de práctica, aprendizaje por proyectos, desarrollo profesional, práctica docente.

INTRODUCTION

This paper presents the work carried out in the 2012/13 academic year by the Early Childhood Education-Centre for Teachers-University Network (hereinafter, RIECU). This network was first set up in the 2008/09 academic year and encompasses the interests of university undergraduates and faculty, advisers from the continuing professional development centre for teachers (hereinafter, CEP Centre), and teachers and pupils of Early Childhood Education in relation to the Project Approach (hereinafter, the PA).

The RIECU network offers the possibility of connecting initial teacher training, delivered by the University, and the continuing professional development provided by the CEP Centre for teachers. In previous works (Mérida, Olivares y González, 2012) we addressed both the need and relevance of creating bridges between theory and practice, such as similar initiatives that show the advantages and benefits of this union:

“such as the “National Schools Network” and the “Innovative Links between Schools and Universities” in Australia, the IQEA in England, and “Learning Consortium” in Canada, steps have been taken here to create a collaborative network between infants’ schools and the university, in order to improve the initial preparation of trainee teachers’ as well as the continuing professional development of Infant Education teachers, Teaching Centre advisers, and the academic staff involved (p. 3)”.

This connection also facilitates the implementation of research-action processes, reflecting through and about educational practice (Korthagen, 2004; Schön, 2002; Zeichner, 2005). Bringing together educational agents from the two institutions enables a learning network or community of practice to be created (Hildreth and Kimble, 2004; Kimble, Hildreth, and Bourdon, 2008; Wells, 2001). This network is bound together by the symmetrical interaction of its participants. It is founded on processes of evenly-distributed power and egalitarian positioning, constructed through collaborative dialogue. The intention is not to reproduce the traditional hierarchical relationship between those who consider themselves to be experts in educational matters (university researchers) and those who take on the role of implementing educational innovations in schools (teachers). The aim is to overcome this duality of roles and move towards dialogical learning (Aubert, García, and Racionero, 2009), based on shared reflection and joint participation in practical experiences.

This professional network was created with a view to jointly applying the PA in Early Childhood Education classrooms and investigating the benefits obtained

by the agents involved. The PA method offers the possibility of applying a model of education centred on pupil activity, grounded in a socio-constructivist theory of learning (Rivière, 1999; Rodríguez-Mena, 2007; Vygotsky, 1978; Wertsch, 1988). Educational scenarios are understood as ecological contexts (Bronfenbrenner, 1979) as well as settings for social interaction (Coll and Onrubia, 1996; Edwards and Mercer, 1994). This understanding of teaching and learning is shared by the school and the university.

This paper explores the learning outcomes achieved by the children working on a PA methodology in early childhood classrooms. Because it is a methodology focused on researching, it allows children to formulate hypotheses, explore, investigate, contrast and, finally, to check or refuse their initial hypotheses. Therefore, it is about analysing if this methodology contributes to develop the infant competences in an active-collaborative learning framework. We wish to check if the PA is a suitable innovation to strengthen the learning processes from the particularities of context, relational conditions and schools environment. We start from the conviction of the PA is considered as an environment of interaction and learning, whose epistemology promotes: (1) building the personal identity; (2) to reconsider the organisation of the curriculum from a global approach; (3) to consider what happens outside of school; (4) to reconsider the teaching activities and, (5) to add a located learning approach.

METHOD

Research-action (Denzin and Lincoln, 2005; Velasco and Díaz, 2009) is developed as a qualitative method to observe and understand the educational practices carried out over the course of two months in 24 classrooms with children aged 3 to 6 years of age. Teacher training undergraduates collect data as they develop the PA in the classroom, and 8 meetings are held (one per week) to reflect, together with the teacher and a researcher, on the educational action developed. Consequently, this work respects the action-research essential phases: (a) to recognise the problem or need to assess the effectiveness of the PA methodology in order to improve children's learning; (b) planning and development of the process –establishment of teacher/student team, assignment to centers, meeting of collaborative thinking-; (c) analysis, at each meeting, of the different PA phases or stages and, (d) assessment of the experience through a focus group to identify the next year's proposals, through which would begin the cyclic process of action-research again.

Participants and context

During the 2012/13 academic year, the RIECU network was made up of 24 teacher training undergraduate students, 3 university researchers, 24 teachers of Early Childhood Education, an adviser from the CPD Centre for Teachers, and 485 children between the ages of 3 and 6. A total of 538 people are involved in

the RIECU network.

Problem

What are the most relevant learning outcomes achieved by the children aged 3 to 6 years through working with the PA, in the opinion of those involved in the RIECU network –teachers, adviser, researchers and undergraduate students-?

Exploratory hypotheses

Does the PA method favour the acquisition of personal habits in children aged 3 to 6 years?

Does the PA method promote the acquisition of autonomy attitudes in knowledge building?

Does the PA method enhance the social skills acquisition?

What kind of content does the PA method promote at early childhood classrooms?

Instruments and information analysis

Various instruments were used to triangulate the information and improve the credibility of this research (Creswell and Miller, 2000; Davies and Dodd, 2002). Specifically: (1) semi-structured interviews with the families; (2) a focus group (Harding, 2013) involving 17 teachers, one adviser, and two university researchers; and (3) 24 research journals kept by the university undergraduates.

The participants' discourse was analysed using a mixed inductive-deductive procedure. Following the guidelines proposed by Thomas (2003), two types of units of analysis were identified: (1) Dimensions, which are more general in their nature and scope; and (2) Categories, which are specifications of the dimensions and are more micro in their scope. Both kinds of analysis units, once encoded, have been subjected to an inter-rater agreement, assuming the matching ones and refusing the divergent ones. With all of them it has been made a map of categories which is identified with the hermeneutical-interpretative table showed later, which has used to analyse the data and to make the discussion.

Table 1. *Hermeneutical Matrix of Families, Teachers, Advisers, and Researchers*

Dimensions	Categories
1. <i>Learning habits</i>	1.1. Autonomy 1.2. Order 1.3. Responsibility
2. <i>Learning attitudes to knowledge</i>	2.1. Interest 2.2. Curiosity 2.3. Initiative 2.4. Self-Assurance 2.5. Confidence 2.6. Methodical and systematic approach 2.7. Creativity
3. <i>Learning social skills</i>	3.1. Oral expression 3.2. Active listening 3.3. Respect for diversity 3.4. Help 3.5. Collaboration
4. <i>Learning contents</i>	4.1. Unexpected themes 4.2. Complex themes 4.3. Different levels of family involvement

RESULTS

In the opinions of the teachers, working with the PA enables children in Early Childhood Education to develop habits. By proposing subjects to be studied and expressing their reasoned opinions, children are more easily able to become autonomous, since they are not waiting to be told what to do by the teacher. They become familiar with a new way of being in the classroom as they work with the PA, and they acquire the dynamic to express their opinions, to take on the responsibility that learning is something in which they have to play an active part. They set out their ideas, their concerns and interests in an orderly way, and accept the responsibility that class is a shared setting for communication. Some of the teachers expressed this idea:

TE4: *“When the children work on projects they are more independent; they no longer wait for you to tell them to do this or that. They suggest the subject they are interested in and they tell you which activities they want to know about, what they like...”*.

The families wholeheartedly support the ideas expressed by the teachers:

M1: *“I have seen a tremendous change in my daughter... Before she would get home from school and wouldn't talk too much about what was happening in*

class.... With the PA, every day she asks me questions, wanting to take things into class... ”.

The adviser talked about her visit to a classroom of 5 year olds who were working on the theme of ‘The Universe’, indicating her surprise when she heard them talk and reason. They seemed to be using a higher level of discourse than one might expect for their age group.

A1: *“I was astonished by how they spoke and, above all, the arguments they put forward...About stars being galactic bodies that shine with their own light, and about planets... ”.*

The opinions expressed by the university undergraduates also coincided in this respect. For them, it was a revelation to see the knowledge, reasoning and autonomy children can display at this age. They stated that their views on childhood and children’s capacities had altered when they saw that children ask questions, look for information and express their ideas. They believe that methodology plays a fundamental role in sparking different behaviours among children.

S21: *“At the age of 5 they have a very rich vocabulary and are also brilliantly capable of organising themselves... ”.*

S9: *“At the start I was very reluctant; I didn’t think 3 year old children could do a project... I don’t know, I thought they were too little, too dependent... But when the project got underway I saw how they advanced, they would bring information to class, get involved in the activities... It has had a huge impact on me”.*

Regarding the children’s attitude to knowledge, both the teachers and the families stated that working on projects helps to stir their interest, curiosity and initiative. When they are asked about what the class should investigate, they are given the opportunity to propose subjects that connect with their interests, which really motivates them. It is a magnificent starting point that enables them to think about what they would like to know, guaranteeing intrinsic motivation, a passion for learning, and the acquisition of new knowledge.

The perceptions of the teachers and families coincide in this respect:

TE6: *“It’s incredible to hear children of 4 discuss and ask for explanations of the ideas put forward by their classmates... They ask them where they learned things, and for them credible sources include television, older siblings, relatives... and books, of course... ”.*

TE8: *“What struck me most is when they are suggesting subjects for a project... How they try to convince you so their suggestion wins... They know that voting is a democratic procedure and they are asking for votes... but first you*

have to hear the reasons”.

M3: *“Some of the comments my daughter makes surprise me: Do you know what I would like to learn about the Egyptians? Why don't they write like us? And also, what did they eat and why did they wear so much jewellery? I'm amazed that she would be interested in these things at the age of 5... ”.*

F1: *“When I heard so much about investigating I thought that maybe the children would be like little scientists, very rigid, I don't know... But I have come to see that with projects they work on lots of types of activities... There is lots of emphasis on artistic education and creativity... ”.*

Social skills are also enhanced through the PA. The families and the teachers emphasise the importance of verbalising ideas and expressing feelings during learning. They explain that the PA fosters the children's ability to listen to discourse, and favours their interests and needs. It is a method that places the children at the centre of learning, since they are the ones who suggest, ask, search for information, analyse it and present it. From the theme they want work on in each project to the way in which it is tackled; it all emerges from the children's initiatives. Generally, the assembly is the ideal framework that, on a daily basis, fosters oral expression among the children. In addition to the assembly, they work in small groups to discuss ideas, resolve conflicts, analyse information, and carry out shared work and countless collective activities used to support the PA. Another issue highlighted in project-based work is respect for difference. The children propose activities on the basis of their own prior experiences and interests, so each child suggests what he or she finds interesting. In other words, they express individual tastes, creating a personal projection of each individual in the classroom.

The perceptions of the families and the teachers partly coincide with regard to this dimension, but there are also discrepancies in certain categories. The families and the teachers all agree that the model has the potential to foster oral expression, active listening, and pupil activity:

TE11: *“Yes, social skills are developed a great deal through the PA... Naturally, because when they look for answers to their questions they have to collaborate with the others to find clues, books, photos, games... They are more complex and, generally, collaborative activities... When they complete a worksheet, it is generally a more individual activity”.*

TE12: *“With the PA they are constantly interacting... Sometimes people who are not used to working with projects think that it's a disorganised, noisy, anarchical class... But the children have to talk and discuss in order to learn... At the assembly, they are very excited, they interrupt one another; they talk over each other... They all want to say what they know!!!”.*

M3: *“Yes, I think it really helps them to talk, relate with one another, reach agreements... They get used to discussing and debating everything... Sometimes I find it exhausting!!”*.

However, there are diverging perceptions and opinions, among the teachers and the families, regarding the possibilities offered by the PA to manage diversity and collaboration in the classroom. The teachers are of the opinion that the PA favours the ability to cope with diversity through the construction of inclusive educational environments grounded in a wide range of different activities. Individual activities coexist alongside activities carried out in small groups, large groups, activities involving creation, reproduction, investigation, family collaboration, excursions... This variety of activities, together with the globalised approach on which the PA is based, generates a flexible, open, and plural learning process. They are stimulating contexts in which each child finds a proposal that fits in with his or her capacities and interests, and respects individuality.

TE7: *“It’s very hard for a child to disconnect from a project... There’s always some activity, subject, material or resource that they like, that grabs their attention, and then... they connect...”*.

TE9: *“With a project you do so many activities that it’s almost impossible for children, who are very different, not to feel attracted by a proposal... And because they are the ones who come up with the ideas, they usually like them...”*.

The families, on the other hand, although they value the diversity of proposals and activities put forward in projects, they also feel that the role of educational leaders is taken on by children with higher capacities. They believe that more intellectually gifted pupils get the most out of this methodology, whilst those with a slower pace of learning take on a subsidiary role.

M1: *“I think that, although projects involve lots of different activities, the ‘leading role’ is played by the children who are smarter or have greater capacities”*.

M2: *“Well, although it’s true that all the children take part, it’s also true that the most intelligent children, the most alert ones, set the course for the others... who follow them”*.

F1: *“It seems to me that children from other ethnic and cultural groups have the opportunity to participate with projects, but those with a poorer grasp of the Spanish language are much more limited... Although they do help one another, well sometimes it’s more than just helping; they do the work for the ones who know the least...”*.

The last dimension analysed by the teachers and families is the learning of contents. Both collectives indicated that they were surprised by the themes proposed by the children for investigation:

TE10: *“I am still really amazed... When they tell me they want to find out about things like Australia, Egypt, or the Universe... Although it’s also true that at other times they suggest subjects that are closer to their lives, such as The body, or Dogs...”*.

F1: *“They think of some very interesting themes they want to investigate, not run-of-the-mill... He always wants to learn new things... And to relate what we see outside of school, on cultural visits, trips... Once we were in the Caves at Altamira and he told me he wanted to know about how those tribes lived...”*.

The teachers are of the opinion that children are highly stimulated by the context of information that surrounds them. They are familiar with communication media and information technologies. They are connected to the web, and their socialisation context is no longer just the family, their neighbourhood, or their school. They can access the Internet, see the News on television, videos, etc., and their symbolic and physical experiential universe stretches beyond their immediate surroundings. This new globalised sociocultural reality is manifested in the classroom and demands new methodological and learning proposals.

TE5: *“Of course, they are very bright children; right from when they’re born, they are surrounded by technological devices, experiences with the Internet, video consoles, mobile phones... This is the medium where they are growing up and they know more about it than we do...”*.

Teachers feel that the themes tackled through the PA respond to complex questions that are difficult to resolve and which require a global approach from different areas. They are questions for which, most of the time, they have no answer, and this causes a certain amount of insecurity, because they can no longer take on the role of the teacher who is the main source of knowledge in the classroom. On the contrary, it requires a fair amount of self-confidence and professionalism to expose oneself to the children’s unpredictable questions. They must accept, and express honestly to the pupils, that ‘the teacher does not know everything’ and that they must work together to find the information they would like to know. The teachers express the idea that the contents tackled in projects are ‘a daily adventure to be discovered’, which generates a certain restlessness but at the same time breaks with the daily routine and monotony of other methodologies in which everything is more predictable. They indicate that the themes developed through projects offer them the opportunity to continue learning, training, and that they do not get bored in class. They have the sensation of not ‘stagnating’ in knowledge that they already know and repeat year after year.

TE1: *“At first I was scared... Yes, scared of how it would go, of whether I would be capable of responding to the children, or whether I could keep the class under control... Bear in mind that with worksheets you know, more or less, what a class will be like, and that gives you a great deal of security”.*

The families, on the other hand, expressed different opinions with regard to the contents tackled through the PA. Whereas some value the fact that projects deal with complex and unusual subjects, others stated that at times it is hard to maintain the level of involvement required by this methodology. Some said that for families with a low sociocultural level, very intensive working hours, or care-giving responsibilities, it can be too much work maintaining the level of collaboration with the school required by the PA.

M2: *“I think that projects offer you an opportunity so that, not only does your daughter learn, but you do as well... For example I’ve refreshed my memory about lots of things I had forgotten about Egypt. It’s like going back to school!!! (laughs)”.*

M3: *“It’s true, you do learn... But when you get back late from work and your little girl is saying come on mum let’s look up things on the Internet about Egyptians; I’m an expert on pyramids... The truth is that at times I have felt a little overwhelmed...”.*

The teacher training undergraduates noted that there were vastly differing levels of family involvement. Some families are very committed and bring in resources and information that they have worked hard on and adapted to the children’s capacities, whereas others contribute practically nothing. They see this differentiated situation as an obstacle to the consolidation of the PA:

S24: *“Families in general participate a lot, they are interested, they come into school, they ask questions... I’ve been amazed. My experience at the school I was in last year was very different”.*

S22: *“The families collaborate, well, some do, because others... In my class, there was one boy who had learning difficulties and... he was the one who received the least family support...”.*

The researchers indicate that the attitude adopted by the teachers to incentivise family participation is fundamental. It is a dynamic created over time and based on open communication and an attitude of empathy. This involves opening up the classroom and creating a welcoming atmosphere, in which families feel comfortable and valued. When someone considers their contributions to be important, they tend to get more involved. The researchers expressed this as follows:

UR2: *“The collaboration of the mothers is fundamental in the development of the PA. I think the way the teacher acts to motivate participation has a really strong influence”.*

UR1: *“I think that, in general, the involvement of the families in Early Childhood Education is good... Well, there are always some differences, as in all things... But the most important thing is for the teacher to behave openly, to make the families feel good when they come into the classroom...”.*

DISCUSSION AND CONCLUSIONS

The study shows that the participating agents in RIECU perceive the improvement achieved by children through working with the PA in terms of acquiring habits related with their autonomy, order, and responsibility. These findings are congruent with other studies developed nationally and internationally (Malaguzzi, 2001; Mérida, González, and Olivares, 2011; Pozuelos, 2007; Hoyuelos, 2007; Katz and Chard, 2000).

This paper also shows that the children’s attitude towards knowledge changes as they take on a more active, assured, and autonomous role in relation to learning. The possibility of choosing the themes they study, setting the questions, proposing learning situations, and participating in their evaluation, as pointed out by Torres (2006 and 2011) and Morín (2001), facilitates the construction of a more complex and global approach to thinking and thought.

Their natural curiosity is the driving force behind enquiry, and the support offered by the teachers in their explorations and discoveries helps them progressively to gain confidence in their own possibilities for generating knowledge. This way, not only is the children’s attitude towards knowledge modified; the role played by teachers when working with the PA also changes. Hernández (2000, p. 28) suggests that ‘the teaching function is redefined, acting as a facilitator who supports, tutors, and guides students in their acquisition of knowledge’. This teaching role requires them to listen actively to the children, and to recognise their immense capacities.

As suggested by Dahlerg, Moss, and Pence (2005), working from a perspective of investigation and enquiry in the classroom involves working with a powerful conception of childhood. Children are seen as co-constructors of culture, and not merely as reproducers of knowledge forged and selected by adults. The same notion is expressed by Pozuelos (2007), and Helm and Beneke (2003), who state that, on the basis of their ideas, questions, and mistakes, and the process of verifying or refuting them by searching for and analysing empirical evidence, apprentices are shown the path they can tread to move from intuitive conceptions to systematised conceptions.

Experiencing the scientific method, by asking questions that act as hypotheses to be verified, children are aware of the modification of their ideas and the advancement of their knowledge (Pérez, 2012). The PA also allows for creativity,

for diverging personal responses, alternative approaches, providing there is a well-reasoned and founded argument behind it (Dodge, Colker, and Heroman, 2002; Katz and Chard, 2000).

The development of social skills is another benefit obtained by working on the PA, according to the opinion of the participants in this research. The variety of learning situations proposed and the cooperative learning structure on which it is based facilitate peer-to-peer interaction, help, and collaboration. As pointed out by Domínguez (2003, p. 43), ‘children become a source of learning and constant simulation. Their weaknesses, strengths, interests, and prior experiences are so different that it is always possible to learn from others’. There is a constant stream of socio-cognitive conflicts in the classroom, as moderately differing perspectives come up against one another. Dialogue and verbal reasoning are fundamental tools used to settle these conflicts, and their resolution tailors knowledge to the reality studied (Clark, 2006).

Finally, the study shows that contents created through the PA are global themes, not identified with any area of the official curriculum. They work through everyday experience, allowing life to enter the school and blurring the boundaries between school and life. Making everyday life an object of study facilitates the transfer of knowledge and helps children to enjoy learning as a tool with which to position themselves better in the physical and social world.

The study reveals vastly different levels of family involvement. These findings confirm the contributions of other research that points to the need for harmonious cooperation between family and school (Díez, 2013; Alonso, 2005), and also highlight the difficulty in maintaining high levels of family commitment with the school, particularly in vulnerable socio-cultural contexts (Torres, 2011).

One of the limitations is that the study assesses the perception of participants in the RIECU network relating to the learning outcomes, and not the own learning outcomes of children.

In conclusion, RIECU is an inter-institutional professional network founded on the basis of the development and research of the PA method in Early Childhood Education classrooms. According to all the collectives involved, children at this stage of their education obtain benefits from using a research-based and investigative approach to knowledge. Of particular importance for the children are the attitudes they acquire to knowledge, the social skills they develop, and the themes they have the chance to research and investigate.

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