Evidence-Based Early Childhood Education Practices

Wen-Wei Chiang
Minghsin University of Science and Technology, Hsinchu County, Taiwan

The aim of the research is to investigate the origin and implication of evidence-based practice of early childhood education. The data is collected through interviews, observation, and document analysis. The data is analyzed by childhood development theories. The research results have been drawn that evidence-based practice enables to reach positive education effect. It will apply the right methodology to conduct forensic practice of evidence-based practice in early childhood education. Furthermore, there are different extend on impact due to individual difference, environment, and quality of education.

Keywords: evidence-based education, evidence-based practice, early childhood education

Introduction

The Origin and Implication of Evidence-Based Practice of Early Childhood Education

Evidence-based education practice refers to the integration of professional wisdom and the best available empirical evidence to make educational relevant decisions. The concept of evidence-based practice can be traced back to evidence-based medicine. The Journal of the American Medical Association (JAMA) opened a column “Clinical Decision—From Theory to Practice” in 1990, it is expected to establish a clinical treatment model that is innovative upon traditional decision-making (Davies, 1999). Afterwards, the Gordon Guyatt team from 1990 to 1997 (Guyatt & Rennie, 1993; Jaeschke et al., 1994) introduced the concept of evidence-based medicine; it has used evidence to support doctor and patients in clinical decision-making (Yu, Li, & Chen, 2019). In 1991, the term “Evidence-Based Medicine” has officially appeared in the journal of American College of Physicians (ACP) Journal Club for the first time In 1996, Professor David Sackett, director of the center of evidence-based medicine at Oxford University, and others have jointly made a clear definition of the concept of evidence-based medicine in the British Medical Journal for the first time, treating it as personal clinical practice (Whitehurst, 2018). The combination of experience and the best practice in external clinical evidence can be obtained through systematic research.

The implication of for the implementation of evidence-based early childhood education practice lies that it has its profound methodological ideological foundation. Evidence-based early childhood education aims to improve the scientifically and effectiveness in early childhood education practice, decisions, and practices through the combination of evidence-based research and personal professional experience in learning and teaching process, so it is able to improve the quality of education in early childhood stage. The application of evidence-based practice in education practice is closely related to its importance and application of evidence in the psychology and physical development of child. And all of this is a direct manifestation of the development

Wen-Wei Chiang, assistant professor, Department of Early Childhood Education and Care, Minghsin University of Science and Technology.
of modern education methodology. Modern education science methods are closely related to the development of medical sciences. Evidence-based early childhood education practice is able to better establish cognitive model for pre-school child. The evidence-based education practice usually used the comparison groups between controlled group and test group, and then makes assessment before and after a period of teaching experiment among these two groups. Children in the comparative group should be treated suspiciously and help with finding out evaluation on education effectiveness.

The evidence-based practice shift is trendy in education field in developed countries. Through evidence-based education practice, it boosted reform in International Large Scale Assessment in Education. Then, further Education Monitoring System, which consists of three aspects: incorporating external evaluation of pre-schools, internal evaluation of pre-schools as well as student achievement evaluation is formulated. Schools and teachers have a high degree of freedom and decision-making power for the content and tools of student academic evaluation, the frequency of continuous evaluation and academic progress measurement standards, etc. (Eurydice, 2008).

**Background**

**The Origin of Evidence-Based Early Childhood Education Practice**

The evidence-based practice in early childhood education sprouted from evidence-based medicine, it was popularized in specific disciplines and practical fields such as evidence-based nursing, and eventually surpassed specific disciplines to become an interdisciplinary theory widely used in public management, education, and finance, etc.

Evidence-based practice in the field of early childhood is the process that choose available evidence-based research, knowledge from education experts, and data and input from children and their parents or family members, to identify and provide services, evaluated and proven their earlier education able to achieve positive education effects for children. European Union as well as its member countries, has already shifted the research focus to the relationship between policymaking and the educational/pedagogical practice.

In the past 10 years, evidence-based education practice has been advocated by the European Commission, knowledge-based practice in earlier childhood education field has been transformed into polices (Yu et al., 2019). The Organization for Economic Cooperation and Development (OECD) has widely held seminars to promote educational research and innovation, and advocate the evidence-based education in order to improve the effectiveness and scientific of earlier childhood education (Burns & Schuller, 2007). On this basis, the European Commission initiated evidence-based policy and practice in earlier childhood education field (Eurydice, 2008). Furthers to it brings in innovation and reform on earlier childhood education research, education policy, and education and teaching practice of earlier childhood education by providing earlier childhood education’ policy analysis instrument.

**Reasons for the Implementation of Evidence-Based Early Childhood Education Practice**

Basic learning skills, interpersonal and social skills are acquired at an early age of childhood. Early childhood education is an important stage for child, learning skills, interpersonal and social skills are these two foundations for life of human being. The earlier the ability development, the easier it is for children to learn new skills, develop self-confidence, and change motivation to learn more throughout life. Early childhood education intervention measures are completely effective and make subsequent life-cycle interventions more
cost-effective and easier to succeed. Long-term of evidence-based studies have shown that interventions in early childhood development and psychosocial stimulation are aimed at health and well-being in adulthood, and academic success. There are significant benefits for a high quality of earlier childhood education, it can largely effect on income, interpersonal relationships and social adjustment on a human being. This is reason that many countries attach great importance on implementation of evidence-based early childhood education practice.

Taiwan’s early childhood has been ignored by the government for a long time, and relevant laws and regulations have long been out of date. Appropriate, especially the two systems of kindergarten and nursery failed to be effectively integrated, creating social resources. There are a lot of waste and the inadequacy of the earlier childhood education system, and the early childhood is lack of scientific management. However, in the process of rapid changes in society today, there are emerging demand on the changes in the economic pattern of early childhood industry, the impact of declining birth rates, and the family are more focusing on education quality than past (Sun, 2004).

Zhang (2006) addressed that increasing diversification of the population structure and the development of information dissemination media, the care of young children and the relationship between the education system, evidence-based practice of early childhood education as a contemporary education concept has widely the received the attention of government and education agencies.

Significance of Evidence-Based Early Childhood Education Practice

Early childhood education is the foundation of all education and development, and the future of children is key competitive of the country. The United Nations Educational, Scientific and Cultural Organization (UNESCO) has proposed six teaching principals for education, in which, “strengthening the attention and education of the early childhood stage” as the primary goal (Lee, Krappmann, & Aidoo, 2015). This shows that early childhood education has become the focus of future education. The set of evidence-based method has become the principles and practices that make people rethink education, education policies, and educational early childhood education practice is the basis for formulating professional judgments based on professional knowledge on early childhood education, which is intended to improve the scientific and practicality of education policies, decision-making and effectiveness, thereby improving the quality of education and teaching. By leverage global existing education, it shall follow research and documentary evidence. Educators at all levels should do ask educational questions; know how to use electricity systematically and comprehensively method to retrieve evidence, it requests to use electronic and non-electronic methods; to find and read the evidence, through objectively evaluate and analyze these evidences according to professional and scientific standards, it enables to determine current evidence and educational needs and environmental education reform in early childhood education practice.

This study is about the operation of early childhood education practice, it will provide the implication for the operation of education authority and early childhood education institutions, earlier childhood education practitioners, and their parents. This study is significant to protect the rights and interests of children and the formulation of related education method.

Methodology

Forensic Practice of Evidence-Based Practice in Early Childhood Education

Evidence-based education itself is a new concept, which is borrowed from evidence-based forensic practice, but medicine and earlier child education are two completely different disciplines and fields. Reference
in form does not mean that it can be copied into early childhood education directly. Early childhood education is an education system built for child’s development and learning. Evidence-based education practice for earlier child is also committed to students’ individual’s development and cognitive on their new world, also for their education decision-making. The education shall focus on the students’ own learning experience and feelings.

Comparing with forensic practice, evidence-based earlier childhood education obviously needs to collect data and information on these child’s development data and learning effect, build a database, analyze and interpret the data, draw research conclusions, and then provide strong evidence (evidence) for educational practice and decision-making. The focus group must involve in teachers, child, courses, as well as data and evidence from families, schools, communities, governments, and other organizations and the environment.

The Significance and Origin of the Meta-Analysis of Early Childhood Education Research

It is meaningful to carry out Meta-analysis of early childhood education research, as the evidence-based education has made implication that evidence-based education can create an objective academic research atmosphere in early childhood education. Evidence-based education for early childhood as largely been ignored comparing with K-12 education stage or university stage, it is as an object should strengthen research. Although evidence-based education is not a research method, it should be researched. Educational disciplines should devote themselves to the research of evidence-based education, in particular for meta-analysis earlier childhood; it can produce rich research results, and provide education practitioners and education decision-makers with knowledge, understanding and grasp of the meaning and value of evidence-based education, and form the thinking and values of evidence-based education in this important stage of education.

The Advantages and Timing Meta-Analysis in Early Childhood Education Research

In view of the quite different educational systems and evaluation mechanisms, Taiwan has shown their own abilities in the evaluation of student academic achievement. Nevertheless, the evaluation of student academic achievement has gradually become an important part of empirical research on education in Taiwan, and it also monitors the effectiveness of various education systems (Sun, 2004). The evaluation of student academic achievement in Taiwan has three main functions: (a) to provide a guide for students to measure their own academic development level; (b) to provide a basis for teachers to obtain teaching feedback; and (c) to provide a cornerstone for the country to establish an educational achievement evaluation mechanism. The most common evaluation method is continuous evaluation, that is, continuous observation of students’ learning behavior, including students’ academic activities, oral and written test scores, and team activity performance. This evaluation method can be used as a formative test or a summary test (Harlen, 2007).

In almost all education systems, formative testing runs through the beginning and end of a school year and is completed by the teacher. It not only evaluates the learning behavior and social behavior of students, but also evaluates the teaching behavior of teachers. The summative test usually occurs at the end of the semester, the end of the school year, or the end of the semester, and the results will determine the student’s future academic direction. Summative testing also incorporates the parent conference and school annual report (Eurydice, 2008).

Steps of Analysis after Earlier Childhood Education Research

In common steps of educational research, there are different steps in those of general research. The research process normally goes from problem selection, research context, data collection, recording, data analysis, report writing, and presenting result.
1. The number and proportion of research subjects who have established a functional relationship between the independent variable and the dependent variable in the research;

2. The direction of the functional relationship, divide the single subject research into positive effects, neutral/mixed Effect, negative effect. The existence of functional relationships is determined by reviewers using standard methods of visual analysis. This may include testing the changes in the data at each stage in the following aspects: (a) level (average value within the stage); (b) trend (data slope within the stage); (c) variability (points near the level or trend line) Value range); (d) the immediateness of the intervention effect; and (e) the overlap rate of data points across stages (for additional information on visual analysis) (Wood, 2020).

In overall, it will firstly collect child’s physical and psychology development status pre and post of education period, through experimental evidence includes science-based research. Then, generate experimental information, referring to the psychological, social, economic, and neurological, etc.

Early education refers to the education on infants and toddlers between the ages of zero and six from birth to the stage before elementary school. According to the actual situation, the education of infants and toddlers aged three to six is generally undertaken by kindergartens, so early education in a narrow sense refers to the education of infants and toddlers aged zero to three. In this research, it will select 0-6 year’s old child in early childhood education institutions to conduct study (Zhang, 2006).

Through implementation on two years period of application of evidence based practice in five different at early childhood education institutes based in Taiwan, 75 child aged between 2-6 years old, 40 fathers and mothers, 15 teacher involves in this study

**The Meta-Analysis Method of Early Childhood Education Research**

Evidence-based education practice in beginning is mainly origin to analyze that whether the education achieves the education quality index, it can usually be clearly determined by the content of the research report. In which, the data collection is fundamental for meta-analysis method of research. J. Hussey and R. Hussey (2003) introduced that there are two types of data collection methods including first hand data and secondary data, this research designs both data collection upon first hand and secondary data through following ways:

In overall, the experimental data is used to compare, evaluate, and monitor the process it will conduct profound comparison on learning and teaching effect such as child’s development key figures, test result, turnover, employee satisfaction, and financial data between pre-data and post-data. Further to, it will evaluate the education technique and method with regard to effect on child. The meta-analysis method used qualitative data and quantities data will be furthered analysis to improve the evidence-based understanding on education effect.

A purposive sampling method has been conducted among students of various types of early childhood education institutes, the questionnaire is designed and its reliability and validity are verified to conduct a pilot study, and the content of the questionnaire is adjusted according to the actual situation of the pilot study results and the results of previous investigations after the feedback results. Through purposive sampling of questionnaire survey can largely improve the reliability and validity of data collection method. The collected effective questionnaires are sorted out, the Statistical Product Service Solutions (SPSS) data analysis system is used to analyze the statistical results, and the survey results are obtained through a systematic research method.
Results and Discussions

Through two years of application of evidence-based practice in early childhood education, the data has been collected before and after application on two years application of evidence based practice in five different at early childhood education institutes based in Taiwan, 75 children aged between 2-6 years old, 40 fathers and mothers, 15 teacher involves in this study among, result has shown as below:

The Meta-Analysis Problems and Corresponding Strategies of Early Childhood Education Research

Early childhood education is a progressive and systematic process, Wood (2020) has introduced that Piaget’s framework believes that learning cognition of child is the result of the gradual construction and formation of the interaction between an individual and the environment. The early intellectual development of a child depends on its environment and social background, that is, whether the child can actively participate in the learning project, and the degree of participation will affect the learning effect. The complete literacy is obtained between school and family. However, the process of “teaching-learning” alone is not enough. Therefore, meta-analysis problems and corresponding strategies of early childhood education research shall involve in surroundings of child. From data obtained by observation and interview by teachers and parents, and development of children’s intelligence has obvious positive co children and correlated with evidence-based education practice. The development of children is not only related with the children’s education practice, but also relevant with child’s individual difference and family environment etc., this will be major problem of the meta-analysis problems. In order to better represent the result of samplings, it is better to apply relevant strategy such as purposive sampling on all types of institute and family in different background. It does not only select on public kindergarten, but also sampling on foreign invested bi-language kindergarten, does not only select on first year of class, but also select on second class, in this way, it is expected to improve the representative of data.

In addition, literacy for reading skill of child is a basic tool for children to learn all kinds of knowledge. If you get in touch at an early stage and use it more, you can achieve practice makes perfect. For young children, the best age is when they are 4-5 years old. Compared with the logical memory of adults, they are more inclined to memorize fonts, pronunciation, and physical objects. The latter is easier. The ability of literacy is also the ability to communicate and communicate with the real society. In this study, it will attach more important on literacy-based reading skill of child.

The effects of early childhood education do not only cover reading, but also covers social skill and psychology and physical, in which, children’s physical development have been rigorously investigated only within this research program. This study will directly targets children’s physical development outcomes, while many education programs in these education institutes have been implemented and how they are implemented. Research program has been shown to increase child immunization rates. In addition, there is evidence that Research program in its early years of implementation reduced child mortality, and in particular mortality from causes that could be attributed plausibly to aspects of child’s physical development, particularly immunization and physical development screening (e.g., measles, diabetes, whooping cough, and respiratory problems). These data will help with identifying child’s reading skill, social development and physical development. This can better represent child’s development according to Piaget’s development framework (Wood, 2020).

Based on this study, through interview on management on these education institutes, it has also found that the quality of education also related with teacher’s education quality and qualification. Evaluation based evidence on these kindergarten survey programs shows that high quality earlier childhood education can be
implemented across the class. It has found that teacher’s higher education qualification and teaching capability has positive effects on children’s development. Assuring high quality of class education, attention to teacher qualifications and compensation, additional ongoing on-site quality supports, such as the ones described previously, and quality monitoring enables to improve the quality and effect of early childhood education.

The Content of the Report After the Analysis of Early Childhood Education Research

Upon the study on 2-6 students as research objects, and collects data through the opinions and practices of school teachers, parents and kids themselves, and aims to explore the effect and influence of children’s reading skills on the reading ability of children aged 2-6. Among them, starting from the physical and psychological characteristics of children aged 2-6 to develop children’s intelligence and learning ability, focusing on the impact of children’s reading ability, and the relationship between children’s reading interest and reading ability, and then exploring how the evidence-based practice is guided children reading skill and capability to improve children's reading ability. Through the study on reading development of child, it has conducted study by following stages:

The first stage: Questionnaire survey and interview. Through questionnaire surveys and interviews, the teacher aims to understand the relationship between the basic learning recognition ability of each child and teaching practice.

Questionnaire and interview structure: Basic information about children and parents including children’s age, name, parent’s level of education, emphasis on children’s pre-school education, support for this children’s reading level, and specific attitudes.

It will use closed-ended questions (multiple-choice questions) and open-ended questions (interviews). The content mainly involves in teacher’s teaching method, and their understanding and attitudes towards parent-child reading. Observe and evaluate how teacher and parents perform actual reading class, and record the children’s interactions with this.

The second stage: Pre-test. The researcher prepared four sets of word recognition games in each class. 6-7 children in the non-experimental group and 6-7 children of child is experimental groups were asked to evaluate the word recognition through games. During the evaluation, the researcher recorded the children’s recognition scores. In the pre-test process, it is found that the child can reach the plot in the drawing, then the teacher marks two in the corresponding column on the front side, marking that the reading ability level tested at this stage is two.

The third stage: Evidence based education experiment. After the pre-test, experiment teaching was conducted with 6-7 children in the experimental group. First, the researcher and the children in the experimental group carried out children's book reading activities. The children simultaneously received a total of four weeks of about 30 minutes of story teaching each time in the playroom; and the other 6-7 children in the non-experimental group performed daily activities as usual. At the same time, cooperate with parents to carry out children’s book reading projects for children before going to bed or on rest days. The choice of children’s books is chosen by the parents according to their own preferences and the teacher’s suggestions. During the experimental teaching process, an intermediate period of time was randomly selected for mid-test. During the intermediate test, it is found that children can reach the story of writing. Then the teacher marks four in the corresponding column on the front side, marking that the reading ability level tested by the children at this stage is four.
The fourth stage: Post-test. After completing the experimental teaching, the researcher will conduct a post-test for the children in the non-experimental group and the experimental group. The post-test schedule and tools are the same as those of the pre-test, and finally compare with the pre-test. In the post-test process, it is found that children can pay attention to the text and ignore the reading of the storyline. Then, the teacher marks eight in the corresponding column on the back, marking that the reading ability level tested by the children at this stage is eight.

The research can use pre- and post-measurements to test the changes of children’s reading capability involving in this study, and at the same time use questionnaire survey and interview methods to understand the children's initial word recognition ability and teaching method in education institutes, and to conduct more in-depth discussions on the changes of the subjects. The test content of this study uses the reading game as a comparison between the pre-test and the post-test. Among them, the researcher needs to prepare four sets of word recognition games. There are 50 groups of words and 100 words in the game for children to recognize and read, and all of them are required to read aloud. The teacher records the words in the content and compares the children’s recognition ability in the pre- and post-test. The pre-test and the back side need to be objective, carefully reflect the real test results of these children, and through comparison, it can have a better understanding on the effectiveness of evidence based education.

In this study, it has conducted the study on course delivery in class of international preschools, these type of preschools brings in diversity and bio-language environment for children, it provides a lot of language activities in class in order to develop children’s language skill in socio-emotional, speaking, listening and writing through language education activities, this study has provide evidence that second language skill development has strengthen home country language development through pre- and post-test on child’s both home and second language skill. Therefore, it has made evidence that traditional teaching skill like listening, speaking, reading, chanting, and other forms are less effective than activity-based learning in class for children. It has made implication of two languages class shall be organized in form of activity, help child to imitate language, but also guide them to understand and describe things in two languages, which motivates them to have different answers, the language content is also novel, vivid expression, and can encourage children’s thinking activities to show diversification, uniqueness, flexibility, and improve the development of children’s creative thinking and language development.

In the research process of this subject, the teachers of these different types of early childhood education institutes take the lead to participate in the research, guide parents and investigate parents, record everyone’s feedback, attitude and research results, and collect some success and failure cases to summarize and analysis.

Although there are different teaching philosophies by different sampled earlier childhood education institutes, they all advocate the learning method of multiple intelligences in order to realize the various potentials development of children in the early stage, and different scholar’s advocate all-round learning. Usually, in most countries, the education of 2-6-year-old children is completed through different earlier childhood education and parental guidance. 2-6-year-old children are in a period of rapid development both physically and psychologically. With the understanding of things, their perception gradually increases, attention, observation, imagination, and other aspects are also gradually improving through systematic evidence based education practice.

Conclusions and Implications

Through this study, it has conduct study on establishment of evidence-based practice in early childhood education and designed the qualitative based and quantitative based research method; it has successfully made
application of evidence-based practice in early childhood education, furthers to, it has conducted all round of
analysis on evidence-based early childhood education practice effects on the 2-6 years old child’s reading skill,
physical development and social skills.

In conclusion, scientific research of this study has made application on evidence-based practice in early
childhood education, it is upon learning-based and teaching based empirical study, and this study has used the
real and reliable educational research obtained data by actual early childhood education practice in Taiwan.

The quality of the data is guaranteed by data classification, which refers to design, analysis, and logic, and
it make sure draw a representative and valid research result.

Evidence-Based Early Childhood Practice Has Positive Impacts on Earlier Childhood Enrollment

The child’s parent is likely to recommend their surroundings to choose their organization upon satisfaction.
In particular, dual language early childhood organization enjoys great popularity among parents, in which,
application of evidence based practice in dual language early childhood organization normally has better effect
than single home country early childhood organization.

This Study Has Also Examined the Impact of One vs. Two Years of Earlier Childhood Education

The existing evidence suggests that more years of earlier childhood seem to have larger gains by
application of evidence-based practice, but it is often better effect of an additional year of education than the
gains typically experienced by a four-year-old from one year of participation. Why the late participation on
application of evidence-based practice generally results in smaller gains is unclear. It may be that children who
attend at four years old with same curriculum across the two years rather than experiencing sequenced two-year
curricula in the same classroom.

Children Show Larger Gains in Higher-Quality Application of Evidence-Based Practice

Higher-quality application of evidence-based education practice in earlier childhood education can have
obvious impacts on children’s development in both physical and social skills. The quality features at children’s
active interactions on application of evidence-based education practice, and it will have positive impact on
children’s language skill and interpersonal skills.

This study also made evidence that earlier childhood education shall attach great importance on
qualifications and compensation, teaching planning of teachers, evidence based earlier childhood education
practice shall be organized with additional ongoing on-site training etc. In which, in class education can play a
critical role in ensuring that children can better acquire reading and social skills during their 3-5 year stages of
earlier childhood education. Earlier childhood education curricula vary widely by education philosophy by
different institutes. In this study, most education institutes, labeled at developmentally focused targets at
different level of earlier childhood education.

However, their earlier childhood education quality varies by types of earlier childhood education institutes
and individual different of child, empirical study in this study has demonstrated that they are at similar level in
children’s development, social skill and language and literacy skill, quality of earlier childhood education can
largely improve the social skills and self-regulation, compared with traditional education practice in earlier
childhood education in most Taiwan education institutes. The children who are enrolled in the application of
evidence based practice, they are more likely to acquire better social skill and benefit in development after the
child leaves earlier childhood education.
We Found That the 4-5-Year-Old Child’s the Golden Period of Children’s Language Development

According to this period, young children are keen to learn to speak and express, hoping to be able to communicate with the surrounding people freely, and at the same time, willing to learn new knowledge and life experience. In which, 5-6-year-old child is strong in social development. Few global class education of this earlier child education has been evaluated rigorously on evidence based education practice. However, existing evidence from independent evaluators shows that there are no or small gains associated with their use, when compared with other commercially available earlier childhood education, researcher-developed course developed by individual teachers. A revised version of a widely used global curriculum is currently being evaluated via a randomized trial, so it remains uncertain in this study, but it is clear that kid’s social skill has been largely improved in these international courses, but no significant impact on reading skill of Chinese context.

In overall, application of evidence-based practice in early childhood education benefits both early childhood education organization’s word of mouth, the result indicates that high-quality early childhood education application is not only cost-effective educational interventions and are likely to be profitable investments for both family and child.

References


