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EDITORIAL

# Educational Equity: The Call of Global Education

Marta Pellegrini,[1] Silvia Dell'Anna[2]

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*"The problem with our education system is not that parents do not have a choice. The problem is that inequities continue to exist."*

*--Patsy Mink*

AS an indivisible sub-system of society, education is relatively independent and deeply restricted by the social environment. The issue of education equity is regarded as an extension and expansion of social equity in education. It is a vital link that cannot be ignored in education and an essential cornerstone of social justice.

In 1994, UNESCO held the "World Conference on Special Needs Education: Access and Quality" (World Conference on Special Needs Education: Access and Quality) in Salamanca, Spain. At the conference, the educational concept of Inclusive Education was put forward emphasizing that education should be an educational process without exclusion, discrimination, and classification. With the deepening of relevant research, the connotation of inclusive education is constantly enriched and deepened, and the focus of attention has also expanded from more specific persons with disability to those marginalized by political, economic, and cultural factors, and even ignored and excluded by traditional education group (International Bureau of Education, UNESCO, 2009).

One of the basic concepts of inclusive education is: the right to education is a fundamental human right and the foundation for building a fairer society. This basic educational philosophy emphasizes that everyone has the right to education. Regular schools should admit all children to school and provide them with the education they need appropriately.

However, in this process, the unfair phenomenon of being deprived of the right to education due to factors such as gender, economy, and culture has gradually appeared. For example, the dropout of girls and young women from school (World Bank, 2018), the difference in educational opportunities and educational resources between children in poor and developed areas (United Nations Department of Economic and Social Affairs, 2020), the educational differences between the children of migrant workers and urban children in cities (Chang & Bu, 2020), all these demonstrated significant gap to reaching the accurate education equity. Especially after the outbreak of the COVID-19 pandemic, it has exacerbated the education losses of disadvantaged groups. The most marginalized groups, namely girls, people with disabilities, people in conflict areas, remote rural areas, and the poorest people, have become the groups most severely affected by school suspensions (Cheng et al., 2020; UNESCO, 2020).

The concept of educational equity contains two levels of content: the fairness of educational opportunities and the fairness of academic quality. At present, countries worldwide are committed to improving the fairness of educational opportunities and quality of education through inclusive education. As one of the countries that implement inclusive education most thoroughly globally, Italy attaches great importance to the formulation and implementation of inclusive education policies (Ianes, Demo, & Dell'Anna, 2020; Morganti & Cottini, 2016). After more than 40 years of development, more than 99.9% of students with disability are currently receiving education in regular schools and have gradually formed a more advanced inclusive education concept, sound laws and regulations (Gabel & Danforth, 2008). Nevertheless, Italian researchers and policymakers have been working to improve professional support for teachers and the evaluation of the Italian *full inclusion* model. This has a demonstrative significance for the establishment of a global inclusive education system.

In China, the government solves uneven development of education quality between urban and rural areas and between regions through poverty alleviation through education to promote the equitable development of education. Promoted by China's poverty alleviation policies, a diversified poverty alleviation entity combining the state, society, schools, and individuals has emerged. Each entity adopts different forms of education to help poverty (Zhang, 2020; Zhu, 2020). These educational poverty alleviation projects have effectively improved the academic level and human capital of educationally impoverished areas, both in form and in substance, and promoted educational equity.

The three articles published in this issue of the journal separately studied the methods of Italy and China in the process of advancing educational

equity. Gaggioli & Sannipoli (2021) conducted a questionnaire survey on the attitudes of 544 Italian curriculum teachers and curriculum support teachers (counting 307 mainstream and 237 special-education teachers) on students with intellectual disabilities to better understand how these attitudes affected education. This article provided evidence and direction for the effective implementation of inclusive education from the perspective of evidence-based research. The Italian inclusive education system reflected in this research undoubtedly provides an Italian model for the establishment of education equity worldwide.

Wu and Qin (2021) and Hai (2021) were concerned about China's poverty alleviation by education. They elaborated on how China's poverty alleviation by education action can solve the inequity between educational opportunities, educational resources, and educational outcomes in poor and developed areas. From the perspectives of regional and individual poverty alleviation by education, they summarized China's regional and individual typical cases by means of educational narrative. In their studies, we can see that China promotes education equity through poverty alleviation by education, whether it is regional or individual assistance. Therefore, continuously condensing experience on the road of realizing social development has formed "Chinese stories."

At the same time, these studies also provide a new perspective for our understanding of education equity. Whether it is the deep implementation of inclusive education in Italy or the universally promoted preference alleviation by education in China, both strive to achieve fairness in the education process, that is, to treat every student equally, on the premise of attaining fair educational opportunities first. This also reflects the education equity theory of Coleman (1968) and Husén (1975), that is, by providing equal educational resources and educational opportunities, the equality of educational results can be achieved.

Even today's continuous development of society, education equity is also a theme that countries are constantly pursuing. Just as the *education at a Glance 2017* released by the Organization for Economic Cooperation and Development in 2017 pointed out that proper and high-quality education can promote individual self-realization and bring economic growth to the country. "Countries should ensure that education meets the needs of today's children and has an impact on their future ambitions." (OECD, 2017).

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PERSPECTIVE

# When the Individual National Culture Meets a Transnational Research

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*"Research is formalized curiosity. It is poking and prying with a purpose"*
*-- Zora Neale Hurston*

WHEN evidence enters humanities and society, with its scientific and effective characteristics, it gradually becomes a new paradigm for educational research and practice. It is becoming popular worldwide (Slavin, 2020). At present, all over the world, evidence-oriented evidence-based research has become one of the critical analysis methods in the educational research method system. Especially in the United States and the United Kingdom, evidence on the effectiveness of education reforms has become increasingly important, and more and more scholars are using evidence-based methods to study educational issues.

According to the definition of Whitehurst (2002), Assistant Secretary of the Office of Educational Research and Improvement, U.S. Department of Education, evidence-based education refers to "The integration of professional wisdom with the best available empirical evidence in making decisions about how to deliver instruction." Professional wisdom refers to the judgment acquired by an individual through experience. The experimental evidence comes from the scientific research results of psychology, neuroscience, sociology, economics, etc., especially the research results in the educational environment. This means that in evidence-based education, scientific evidence has an immeasurable role.

The well-designed experiments, suitable experimental methods, and techniques advocated by evidence-based education emphasize logic, reasoning, and repeatability when analyzing data, making the research results of evidence-based education convincing. This has caused many researchers to pay more attention to the facts reflected in the data or evidence in the education reform when conducting educational experiments while ignoring the particular characteristics of education and eventually fell into the arrogance of evidence worship (Barends et al., 2014).

Education is a practice that revolves around people. It has mutual influence and interaction with political, economic, scientific and technological, and cultural factors (Davies, 1999). As Piaget (1988) said: "The public is not aware of the complexity of educational issues and does not know that pedagogy is a science comparable to other disciplines, and because of the complexity of various factors involved, This subject is even a complicated science."

In determining the evidence of educational intervention and educational practice, in addition to scientific characteristics and rigor, the appropriateness of the method is another crucial factor that education researchers must pay close attention to. In particular, the suitability of measurement tools is more critical. Only through scientific measurement tools and establishing a reasonable research norm can the essence of research be revealed.

In international comparative education research, using scientific measurement tools to conduct evidence-based research should arouse our attention. Due to the differences in cultural backgrounds, political systems, and concepts and habits of different countries, their perceptions of the same issue are diverse. This makes the answers of subjects in other countries to the same question not the same, which leads to differences in statistical results, and this difference cannot be used as compelling evidence for education evaluation. For example, in the assessment of collectivism, Westerners may give more negative comments, while Easterners may be more inclined to give positive responses (Yang, 2005).

Therefore, when doing transnational comparative research, we should localize measurement tools and conduct large-scale tests to establish a norm suitable for individual national research. Only by establishing measurement tools that are in line with the individual nation can it truly reflect the reality of education in the very individual country.

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COMMENTARY

# Global Development of Children with Intellectual Disability: Intrinsic Factors versus Extrinsic Interventions

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*"In special education, there's too much emphasis placed on the deficit and not enough on the strength." —Temple Grandin*

***Abstract:*** *How to realize the global development of children with intellectual disability is a complicated social issue. When a child has intellectual disability or is on the verge of intellectual disability, the environment the child is in and the humanistic support the child obtains play a vital role in achieving the global development. Given the intrinsic factors cannot be changed, and then the extrinsic interventions subsequently become the only means for children with intellectual disability to achieve personal development. However, conventional education cannot meet the special needs of children with intellectual disabilities, so training special supporting teachers has become the best choice to achieve this goal.*

***Keywords:*** *Intellectual Disability, Education, Extrinsic Intervention, Intrinsic Factor, Equity*

INDIVIDUAL global development is an extremely complicated process involving intrinsic and extrinsic factors function well mutually. Deficiency in any one the contributing factors would result in developmental retardation, of which intellectual disability (ID) is one of the focal dimensions we care of (Marrus & Hall, 2017; Shea, 2012). In comparison, the intrinsic factors of ID generally refer to the inheritance characteristics that individuals do not have

choices to change them. As thus, for an individual with the medically diagnostic inheritance features of ID, the only hope for reaching a relatively better global development level is extrinsic interventions (De Giorgio, 2017). Therefore, we need to provide them with individualized optimal interventions delivered by well-trained supporting personnel. However, training the supporting team who possesses specific properties to identify and deliver the needed interventions is a systemic project (Gaggioli & Sannipoli, 2021).

# Intrinsic and Extrinsic Factors of Intellectual Disability

As indicated by a meta-analysis of population-based studies, the prevalence of ID across the world was 10.37/1,000 population (Maulik et al., 2011). Of them, approximately 17%-47% had exogenous and genetic causes (Printzlau et al., 2017; Webb et al., 1987). According to the World Health Organization (WHO), "ID is a significantly reduced ability to understand new or complex information and to learn and apply new skills (impaired intelligence). This results in a reduced ability to cope independently (impaired social functioning), and begins before adulthood, with a lasting effect on development." (World Health Organization, 2021). Based on this definition with the combined indication of the American Association on Intellectual and Developmental Disabilities (AAIDD) (2021), the concomitant limitations of ID should be considered simultaneously (**Table 1**).

Medically, the intrinsic factors of ID are generally indicating those that cannot be changed with exogenous interventional maneuvers, such as genetic and hereditary factors. As listed in the **Table 2**, these intrinsic factors are either from the chromosomal or hereditary disorders. Meanwhile, some acquired factors like congenital and developmental elements are also considered as the partially modifiable factors if the preventive procedures were given promptly. However, if these early preventive interventions were not provided, then the ID resulted from them was also regarded as the non-changeable intrinsic factors (**Table 2**).

The development of each individual is not only based on good innate factors, but the environmental and sociocultural factors also play an irreplaceable role (**Table 2**). These extrinsic contributing factors are relatively much easier to be adjusted if adequate attention was paid to. Although these factors are strongly associated with changes in society, economy, culture, education, psychology, family, and health, the proportion of each component that can be intervened is very large. As demonstrated by Gaggioli & Sannipoli (2021) that training supporting teachers for ID students possesses particular importance in helping the individual student as well as the whole community.

# Extrinsic Intervention of Intellectual Disability

| Table 1. Limitations of Intellectual Disability. |
|---|
| Communication |
| Personal care |
| Home life |
| Social skills |
| Utilization of the community |
| Self-governance |
| Health and safety |
| Functional academic skills |
| Leisure time |
| Work |

*Note: Revised from the American Association on Intellectual and Developmental Disabilities (AAIDD).*

Since we cannot change the intrinsic factors of ID, the only thing we can rely on is the extrinsic interventions (De Giorgio, 2017). In a particular society, individuals still cannot easily change their social, economic, cultural, and health care environment. Therefore, for the global development of ID individuals, it can only be counted on to seek appropriate educational interventions. In this process, education shoulders an inestimable task. However, conventional education cannot really satisfy these ID children to achieve breakthrough development, which can only be achieved through special education delivered by educators who received special training.

The emergence of special education provides hope for the development of ID children, but it also in turn puts forward higher requirements for those engaged in special education work. Special education workers need to know the skills and methods of conventional education, but also need to understand the special needs of each ID child, so as to guide and educate them with their own knowledge and judgment. Therefore, the training of special supporting teachers has become an essential project.

As mentioned by Gaggioli & Sannipoli (2021), teachers who receive special supporting training must clearly know the attitude theory of the three-factor model and corresponding five dimensions it contains, through which these teachers would these teachers will get vocational training, teaching experience, perception of effectiveness in their own knowledge regarding ID, perceived support, and promotion of positive attitudes towards ID. There is no doubt that such special supporting training of ID teaching personnel will produce a great positive impact on the global development of ID children. Of course, for every ID individual, the realization of its global development requires a multidisciplinary comprehensive intervention that includes medicine (family, pediatrics, neurology, and psychiatry), psychology (clinical and educational), education (conventional and special), rehabilitation (physical, occupational, and recreational), nursing, and social work (Katz & Lazcano-Ponce, 2008; Matson & Shoemaker, 2011).

| Table 2. Intrinsic and Extrinsic Factors of Intellectual Disability. |
|---|
| **Intrinsic Factors** |
| Down Syndrome |
| Fragile X Chromosome Syndrome |
| Prader-Willi Syndrome |
| Rett Syndrome |
| Neurofibromatosis |
| Tuberous Sclerosis |
| Lesch-Nyhan Syndrome |
| Adrenoleukodystrophy |
| Phenylketonuria |
| Mowat-Wilson Syndrome |
| Galactosemy |
| Tay-Sachs Disease |
| Glycogen Deposit Disease |
| **Partially Intrinsic Factors** |
| Neonatal Hypothyroidism |
| Lead Poisoning |
| Fetal Alcohol Syndrome |
| Prenatal Exposure To Substances |
| Rubella |
| Cytomegalic Inclusion Body Disease |
| Syphilis |
| Toxoplasmosis |
| Simple Herpes (Genital Type II) |
| Prenatal Factors: Toxemia; Uncontrolled Diabetes; Intrauterine Malnutrition; Vaginal Hemorrhages; Placenta Previa; Umbilical Cord Prolapse |
| Perinatal Period: Prolonged fetal suffering with neonatal anoxia; Asphyxia related with suffocation; Inadequate application of high forceps or a poorly applied Kristeller maneuver |
| Postnatal Period: Encephalopathy from hyperbilirubinemia (kernicterus); Encephalic traumatism; Infections (encephalitis and meningitis) |
| **Extrinsic Factors** |
| Society: Underdevelopment |
| Economy: Poverty |
| Culture: Backwardness |
| Education: Low-level stimulation |
| Psychology: Distortion |
| Family: Divorce or Instability |
| Health: Scarcity or Inadequate |
| Note: Revised from Katz & Lazcano-Ponce, 2008. |

# Concluding Remarks

True educational equity is not only reflected in each child's access to educational opportunities, but also in whether those ID children are given sufficient attention and spare no effort to promote their global development. The global development of ID children requires the contribution of special teachers, which requires special training programs to provide sufficient professional training for these supporting teachers. The intrinsic factors that lead to a child's ID cannot be changed, whereas we can provide the possibility for its global development, at least in part, with the help of strong extrinsic educational interventions delivered by supporting teachers who received special training.

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SHORT COMMUNICATION

# The Relationship between Basic Education and Higher Education in a Pandemic Context: The Portuguese Situation

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***Abstract**: In this article, the authors analyze the current situation in Portugal, in terms of the relationship between basic education and higher education, focusing on the influence of the COVID-19 pandemic in these processes. Moreover, this piece also addresses the quality of student preparation in basic education for a positive and successful experience in higher education.*

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***Keywords**: Basic Education, Higher Education, Portugal, COVID-19, Transition, Access to Higher Education*

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# Introduction

IN this article, the current situation in Portugal is analyzed at the level of the relationship between basic education and higher education, focusing on the influence of the COVID-19 pandemic in these processes, based on the prerogative that schooling is currently critical in the advancement of any society and a fundamental human right (Serpa & Sá, 2019). This commentary also questions to what extent, and in what way, basic and secondary education prepares students for higher education, namely in terms of equipping them with transversal skills, with digital skills taking on a leading role.

# The Transition from Basic Education to Higher Education in Portugal in the Pandemic Context

Contextualizing this commentary, in Portugal, basic education encompasses 12 years, or until the student turns 18 years old. Once the student completes 12 years of basic and secondary education, he or she can enroll in higher education through a national competition covering mainland Portugal, as well as the Autonomous Regions of the Azores and Madeira.

Currently, the COVID-19 pandemic and its multiple social, economic and educational effects is an unavoidable and worrying issue (Carmo et al., 2020; Ferreira & Serpa, 2021; Martins et al., 2021; Sá & Serpa, 2020a; Serpa & Ferreira, 2021), as well as their many and profound implications for the relationship between basic education and higher education (Sá & Serpa, 2020b, 2020c). At the time of the writing of this commentary, the number of deaths caused by COVID-19 in Portugal, on March 12, 2021, and according to official data, was 16,650 individuals (General-Directorate for Health, 2021a).

There are variations between mainland Portugal and its two autonomous regions of the Azores and Madeira: specificities and differences in the measures taken, especially in terms of time (when they were taken) and with similar implications for the topic under analysis. For example, the President of the Regional Government of the Azores and, at the same time, President of the Conference of the Ultra-Peripheral Regions of the European Union asked the European Commissioner for Health and Food Safety, Stella Kyriakides, for a "direct intervention" with the European Commission to make vaccines available in numbers that allow the immunization of Azorean citizens:

> *[…] I do so as President of the Government of the Azores and, for this reason; I am primarily responsible for the destinies of the European citizens who live here. As you certainly know, the Azores, as well as the other ultra-peripheral regions, are spaces that are particularly vulnerable to phenomena of global scope due to the features that shape us and that find a concrete translation in the concept of the ultra-peripheral regions (LUSA, 2021).*

Portugal has been preparing for a gradual relief of the lockdown as of March 15, which also covers the education system, with phased openings of the different levels of education that have been physically closed since January 22, 2021 (General-Directorate for Health, 2021b; Vieira, 2021). In these confinements, the Prime Minister, the Minister of Education and the Minister of Science, Technology and Higher Education recognized that the closure of schools and the inhibition of the face-to-face regime, either on basic education or higher education, would be a position only of last resort, taking into account the negative implications in the students' learning and, also, in the shaping of old and new inequalities (Cotrim, 2021; Silva, 2021).

In this context of progressive relief of the lockdown, and in a country where the rate of transition to higher education is not one of the highest (Dias, 2015; Domingos & Baptista, 2018; Silva, 2021), with the economic factor playing a pivotal role, it is critical to ensure situations of justice and equity (Cherkaoui, 1999; Neves et al., 2016), as well as to mitigate current social inequalities in this new context (Borralho et al., 2020; Carmo et al., 2020; Ferreira & Serpa, 2021), but also educational ones (Tavares & Cândido, 2021). In this regard, Costa (2020) warns that

> *In the countries with the highest human development, in which Portugal is included, the impacts of the Covid-19 pandemic on the worsening of social inequalities have also been occurring in a very evident and very worrying way. In different social strata, there are situations of increased inequality and others are affected by new situations of inequality […]. Another social category, school-age children and youth, has experienced difficulties in pursuing both school learning and peer socialization, both of which are critical to social growth paths. They are in educational inequality compared to previous generations and the physical and relational distance from schools further widens the inequalities between them – depending on the unequal educational and economic resources of their families. The inequalities in future opportunities between them have an increased gap (pp7 and pp8).*

These measures motivated by the fight against the COVID-19 pandemic fostered the critical digitalization in higher education already in the near future (Carmo et al., 2020; Santos & Serpa, 2017; Serpa & Ferreira, 2018). As Lopes (2020) sustains, "In terms of technological fetishism and euphoria and the glorification of the 'internet of things', it is important to take into account people's internet, that is, the way they access it and how they appropriate it" (pp78), at least temporarily (Gaebel et al., 2021; Sá &

Serpa, 2020c). It would be interesting to consider this issue also in basic education (Costa et al., 2021).

In this process, the implementation of innovative pedagogical practices is vital, with the adoption of more active teaching-learning practices (Sá & Serpa, 2018, 2020a). These authors (Sá & Serpa, 2020c) advocate that "teachers and students, due to their traits and various reasons, will have to prepare for student-centered learning through the intentional and sensible mobilization of digital technologies in a complex process, in which each agent will be, ultimately, a critical content creator with enhanced digital literacy" (pp4520), which can and should be complemented with the promotion of home study strategies (General-Directorate for Education, 2021a). In terms of higher education, in particular, some examples of these innovative strategies are flipped teaching or participatory action research:

> *[…] the flipped teaching method. […] this teaching model that reverses the sequence, starting from the student's autonomous work and concluding in the materialisation of the knowledge and competences attained, always with the teacher's support (Santos & Serpa, 2020, pp169).*
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> *By fostering a direct engagement of those involved in solving problems or needs in a context of real situations, participatory action research (PAR) offers great potentialities for the academic training of future and even current professionals (Serpa et al., 2018, pp1).*

Having analyzed the context of higher education in the present and near future, the question remains: does Portuguese basic and secondary education prepare and equip its students with skills and tools to smooth the transition from one educational level to the other?

The potential answer refers, naturally, to the analysis of curricular plans, pedagogical practices and co-curricular activities developed by basic and secondary schools, following the guidelines of the General-Directorate of Education (Decree-Law No. 139/2012 of July 5). To note, the National Curriculum document in force currently has been produced almost eight years ago.

As early as in the 1st cycle (1st to 4th grade) there is a concern, albeit incipient, to provide students with basic knowledge of English. This subject is not part of the core curriculum; it is optional but is seen as a curriculum enhancement activity (General-Directorate for Education, 2021b).

In the 2nd cycle (5th and 6th grade), Technological Education and the English Language are already mandatory components of the curriculum. This investment in more transversal and comprehensive areas is increased in the 3rd cycle (5th to 9th grade), with the integration in the curriculum of another foreign language (in addition to English) and the discipline of ICT (Information and Communication Technologies), with a workload similar to that of the so-called traditional subjects.

In secondary education (10th to 12th grade), the focus on both technical-scientific and transversal competences is intensified, namely with the possibility for students to choose from among six major training areas. The areas of technology and

languages have a very significant weight in the curricular plan of any of the choices, with the open purpose of preparing students for the enrolment and attendance of either higher education or professional/vocational study programs.

However, the COVID-19 pandemic caused profound changes and severe effects on the pedagogical practices themselves. According to Martins (2020), the unfeasibility of direct and face-to-face interaction between students and teachers, resulting from confinement measures and the consequent closure of educational establishments at all educational levels, abruptly interrupted the learning and teaching process without the possibility of preparing the actors for these new educational dynamics. In Portugal, schools reacted in a much diversified way to re-establishing contact with their students. Likewise, initiatives to resume the educational relationship and the teaching and learning process were also characterized by very distinct experiences. Such variability was visible in the implementation of distance learning, namely in its leadership (in many schools, it took on a clearly atomized nature, in which each teacher used a strategy or platform, whereas in others there was better coordination) and in the schools' communicative capacity (namely, in the contact with students and families).

# Conclusion

The disruption in education caused by the lockdowns due to the COVID-19 pandemic further accentuated the inequalities and the lesser competences learned/apprehended, a concern that had already been raised in terms of the preparation for the transition from basic to higher education. Although the curricular plans include technological subjects, with a special focus on the 3rd cycle of basic education and secondary education, these plans were defined and structured for classroom teaching and are jeopardized in the presence of a pandemic that prevents or, at less, limits students in terms of interaction, which is very different in face-to-face teaching vis-a-vis distance learning.

Some of the more severe consequences and also challenges for higher education when welcoming new students are the following:

- Disruptive higher education;
- Receive particularly poorly-prepared students;
- Greater social and school inequalities, increasing social reproduction;
- Strategies to compensate for these limitations;
- Lower the level of requirement;
- Compensation classes;
- New competences and new ways of working;
- Acting as a "follow-up vehicle".

This situation has a profound impact in the short-term on students who are in transition, but also in the medium and long term, and which implies new recovery responses in basic education, but also in higher education. Despite the challenges and difficulties that this situation entails, it can be seen as a window of opportunity to change the cultural paradigm of each of these levels of education, to be seized.

The education systems should learn from this experience, for which very few were prepared, and adapt their plans, methods and techniques to increasingly virtual learning and teaching processes, starting with the intentional preparation of students upstream of higher education and as early as possible, to equip students with the competences needed for a fruitful and successful experience in higher education, with a desirably, peaceful and smooth transition.

The coming years will, therefore, be critical in assessing the success of the implementation of distance learning in Portugal, the new paradigm towards which education systems, in general, are moving, in a country that is still poorly prepared, both in cultural and technological terms. While all the actors involved in the educational processes are working intensively towards achieving this goal, the results of their efforts are yet to be fully assessed.

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ORIGINAL ARTICLE

# Improving the Training of Support Teachers in Italy: The Results of a Research on Attitudes Aimed at Students with Intellectual Disabilities

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***Abstract**: This paper aims to bring research findings on the curricular teacher's and curricular support teacher's attitude toward students with intellectual disabilities. The results bring to imagine possible changes in the current training system that, deepening intellectual disability in discipline and laboratory terms, not necessarily and intentionally get a suitable space to evaluate and work on initial placements. The exercise of reflective competence, necessary to feed a mature self-awareness, is also essential to withstand the possible involutions experienced in school contexts, still far from the inclusive dimension.*

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# Introduction

IN recent years, the teacher's profile specialized in support activities has been the subject of reflection in national and international policies, cultures, and research (Cottini, 2017; De Anna et al., 2015; Ianes, 2016; Pavone, 2017). The OECD report "Teachers matter. Attracting, developing and retaining effective teachers" (OECD, 2005) and subsequently the Communication to the Council and the European Parliament "Improving the quality of teacher training" (2007) have strongly emphasized the need to decline a profile ready to recognize the complexity of today's pupils, encourage the appropriation of cultural forms in their nuances, welcome the challenge of more excellent innovative teaching, as well as openness to collegiality both inside and outside the school, in addition to recovering an authentic and constant observational attitude.

In 2012, the European Agency for Special Needs and Inclusive Education identified values and areas of competence of teachers in inclusive school environments, focusing on enhancing each pupil's diversity and supporting it, working with others, and encouraging continuous development along with professional updating. In particular, the former competence stresses the importance of initial and ongoing training, which targets reflective professionalism in teachers.

Article 12 of Legislative Decree No 96/2019 Supplementary and corrective provisions to Legislative Decree No 66/2017, laying down: "Rules for the promotion of school inclusion of students with disabilities, according to Article 1, paragraphs 180 and 181 (c) of Law No 107/2015" establishes an annual Specialization Course for teaching support activities in kindergarten and primary schools, which provides for the acquisition of 60 university credits, including at least 300 hours of the traineeship, equal to 12 university credits. The Decree states that only applicants in possession of a single cycle Master's degree in Primary Education who have obtained an additional 60 university credits related to inclusion didactics and those already provided for the degree course may participate.

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As for initial training of special-education teachers in lower and upper secondary schools, after the abolition of FIT (Initial training and traineeship), Legislative Decree No 59/2017, it is sufficient to have acquired a master's degree with 24 university credits within the anthropo-psycho-pedagogical field as well as in teaching methodologies and technologies in addition to accessing the annual post-graduate course, typical to all grades of primary and secondary schools.

The didactic system of the Specialization Course, which continues to be the current training course at this time of legislative interregnum, regulated by Decree No 30/2011, corresponds to a total of 60 university credits consisting in lectures and laboratories, intended to thoroughly prepare the enrolled students in the psycho-pedagogical, didactic and regulatory fields. There are direct traineeship activities worth six university credits and six university credits of indirect traineeship activities involving the re-elaboration of the experience with a coordinating tutor appointed by the university, and a trainee tutor, designated by the host school.

Initial training in specialized school staff is currently open to questions and calls for essential reflections (Caldin & Zappaterra, 2016; Zorzi et al., 2019).

According to the European Agency for Special Needs and Inclusive Education, the profile of the inclusive teacher firstly emphasizes the need to recognize, appoint and question personal beliefs on school integration and inclusion and learning differences, to focus on self-awareness and individual positions regarding the vast array of inclusion along with pedagogical skills and didactics. Moreover, The International Classification of Functioning, Disability and Health places among environmental factors, with the possibility of being barrier or facilitator, the attitudes of people who revolve around the person with the conviction that they can "motivate positive, honorary or negative and discriminating practices (e.g. stigmatization, stereotyping and marginalization, or, abandonment of the person)" (World Health Organization, 2001, pp153).

Opinions and attitudes are considered ways of losing oneself in social realities. If they are linked to social representations as they grow and feed themselves in mechanisms of objectification and anchorage (Farr & Moscovici, 1989), they are an individual expression. However, still observable consequences of customs, practices, ideologies, norms, and rational convictions.

If opinions are subjective and circumscribed knowledge, attitudes are authentic assessments given by themselves, others, events, issues, and material goods, accompanied by some degree of advantage/disadvantage (Cavazza, 2005). Scientific literature supports the idea of a multidimensional construct of the attitude (Olson & Zanna, 1993). The tripartite model identifies three components of attitude: cognitive - related to perceptions, memories, and thoughts on the object - affective - which refers to emotions and feelings aroused, and behavioral, that intervenes on intentions and actions (Rosenberg & Hovland, 1960). In the formation of attitudes, different components are involved: direct experience with the object or the socially mediated one, the need for coherence that, to economize mental energies, avoid situations of dissonance and foster true self-preservation, intervenes as appropriate, hindering or facilitating change.

Evidence in literature confirms that there are, with different outcomes in inclusive terms, very well-defined attitudes towards disability (Davis & Layton, 2011; De Boer et al., 2011; Forlin, 2012; Forlin & Chambers, 2011; Taylor & Ringlaben, 2012). The severity and type of disability would strongly influence recruitment in terms of reluctance and inadequacy (Aiello et al., 2018; Dias & Cadime, 2016; Fiorucci, 2014; 2019; Odongo & Davidson, 2016). Intellectual disabilities have a significant standing among these (Cumming & Dickson, 2013; Rae et al., 2010).

In the last diagnostic manual, intellectual disability (ID) is defined as "an onset disorder in the period of development that includes both intellectual and adaptive functioning deficits in the conceptual, social and practical fields" (APA, 2013, pp37). The two criteria that contribute to its definition and the onset within 18 years of age are cognitive deficits identified with an intelligence quotient (IQ) lower than 70. In addition to a deficit and limitations in adaptive functioning understood as the set of social and practical skills learned for everyday life (home, school, working environment, community), with particular attention to communication, social participation, and autonomous life (Schalock et al., 2007; Vianello, 2015, 2018). The weight assumed by the second criterion is evidenced by the fact that the various levels of severity are defined based on adaptive operation and not IQ scores hence determining the need for aid and support. The last report published by MIUR (Ministero dell'Istruzione, dell'Università e della Ricerca - Ministry for Instruction, University, and Research) in 2018, and related to the academic year 2016/2017, reports that 96.1% of the total number of pupils with disabilities attending state and non-state schools, of every order and degree, bear a psychophysical disability: precisely, 67.9% have an intellectual disability (MIUR, 2018). The number of students with ID is significant and requires increased attention.

# Materials and Methods

Data in literature (Findler et al., 2007; Lau & Cheung, 1999; Morin et al., 2013a; 2013b) have identified increasingly clear associations between attitudes towards people with ID and socio-demographic variables in the respondent participants.

It has been observed that previous positive experiences with people with ID are associated with teachers' attitudes, especially in the affective and behavioral dimensions (Sermier Dessemontet & Bless, 2013, 2014). Specifically, the frequency and type of contact appear to affect teachers' attitudes indirectly and predict how teachers are likely to repeat positive experiences. This confirms the practice's usefulness, demonstrated by the fact that a period of traineeship carried out in the presence of people with ID is associated with a more in-depth knowledge of their rights and skills (Yazbeck et al., 2004).

In the studies mentioned, the attitudes of the respondent participants are associated with the level of operation of the target with ID. More hostile attitudes are associated at a lower level of function or in more severe ID.

This work arises from the need to have tools for measuring attitudes and, in particular, those related to the world of ID, to better understand how these can affect educators' teaching.

A first reconnaissance on the instruments for measuring attitudes showed that most of the available questionnaires have a one-dimensional idea of attitudes (Nowicki & Sandieson, 2002) and, as such, are subject to bias, therefore, providing measures that are not representative of the entire concept (Antonak & Livneh, 2000; Findler et al., 2007). On the other hand, it should be remembered that the majority of available questionnaires are not explicitly built for the assessment of attitudes towards ID but address disability in general (Morin et al., 2013a).

For this reason, the chosen instrument was the Attitudes Toward Intellectual Disability Questionnaire (ATTID; Morin et al., 2015), a self-report questionnaire, addressed to ID, composed of 67 items using the 5-point Likert scale, with the possibility to evaluate the item from (1) totally agree to (5) totally disagree and not to express an attitude (9) cannot answer or do not know or represent a neutral attitude (3) neither in agreement nor in disagreement. The questionnaire is divided into three sections:

- Cognitive (30 items),
- Affective (18 items),
- Behavioral (19 items),

which are equivalent to the three dimensions of the attitude and are represented by five factors organized in as many subscales:

- Knowledge of causes,
- Knowledge of capacity and rights,
- Discomfort,
- Sensitivity or tenderness,
- Interactions,

According to the tripartite model of attitude theory, the cognitive component is represented by knowledge of capacity, rights, and ID knowledge. The affective component draws on two factors: Discomfort and sensitivity/tenderness. Finally, the behavioral part emerges as a single factor (**Table 1**).

The questionnaire was translated into Italian, subjected to field test, and validated (Arcangeli et al. 2020). Specific questions related to the Italian school context were added to the original version. They include initial and ongoing training on the subject, years of service, relationship with other social and health services, knowledge of ID, and any school experiences with students diagnosed with ID.

The survey has aimed to analyze attitudes towards ID in mainstream and special education teachers (positive, neutral, or negative), monitoring whether the scores obtained in the various dimensions of the attitudes differ according to the type of teachers considered (mainstream or special education). Plus, one thing needs to be checked is the presence of relationships between quantity and quality of contact and the various dimensions of the attitude towards ID in mainstream and special-education teachers. All to identify which variables represent predictors of the multiple dimensions of teachers' attitude towards ID.

**Table 1. Grouping of the Five Dimensions Investigated by the ATTID Questionnaire According to the Tripartite Model.**

| The Three-Factor Model of Attitudes | Dimensions |
|---|---|
| Cognitive | Knowledge of capacity and rights |
| | Knowledge of causes of ID |
| Affective | Discomfort |
| | Sensitivity/Tenderness |
| Behavioural | Interaction |

*From Rosenberg & Hovland 1960; Zanna & Rempel 1988.*

**Table 2. Mean and Standard Deviations Scores of Mainstream and Special-Education Teachers in the Five Dimensions of the ATTID for Likert Scores from 1 to 5 Points.**

| | ***Mainstream Teachers*** | | ***Special-Education Teachers*** | |
|---|---|---|---|---|
| **The Five ATTID Dimensions** | Mean | SD | Mean | SD |
| Knowledge of causes of ID | 2.36 | 0.59 | 2.30 | 0.52 |
| Knowledge of capacity and rights | 2.28 | 0.46 | 2.19 | 0.48 |
| Discomfort | 1.93 | 0.58 | 1.77 | 0.48 |
| Sensitivity/Tenderness | 2.90 | 0.72 | 2.80 | 0.68 |
| Interaction | 1.96 | 0.48 | 1.81 | 0.43 |

The research was conducted by disseminating the questionnaire on a national scale, which saw 544 teachers of all levels, counting 307 mainstream and 237 special-education teachers. The ATTID questionnaire was sent to schools both in paper and online via a shared link that allowed the completion utilizing a Google form.

The collected data were then processed with descriptive statistics (mean and standard deviation), which allowed to classify the scores of the five dimensions of attitudes that emerged in mainstream and special education teachers as positive, neutral or negative.

# Results

As described in the previous paragraph, ATTID proposes a five-factor structure overlapping the tripartite model of attitudes: knowledge of capacity and rights and knowledge of causes of ID (the cognitive component), discomfort and sensitivity/tenderness (affective component), and the behavioral part.

In the ATTID, for each dimension, the lower the score is and the more positive the attitude towards ID, and vice versa. Likert scale scores of 1 and 2 represent positive attitudes, score three neutral, and scores 4 and 5 negative attitudes towards ID. These results show that both mainstream and special-education teachers are favorably inclined to positive attitudes in all dimensions, particularly in Discomfort and Interaction (**Table 2**).

The data show that special-education teachers seem to have more positive attitudes than mainstream teachers.

Despite a relatively large number of variables correlated with the ATTID dimensions in both groups, a limited number of these are statistically significant predictors of scores of specific dimensions. However, although there are a smaller number of variables that correlate with the various ATTID dimensions in special-education compared to mainstream teachers, most of these associated variables turn out to be predictors of attitude towards ID (except for the knowledge of capacity and rights dimension), while almost none appear to be for mainstream teachers (especially variables that represent teacher-specific characteristics).

Considering the individual variables that are predictors, the influence of more predictors associated with specific ATTID dimensions are observed in special-education teachers compared to mainstream ones. Those related to teachers' characteristics, i.e., vocational training, teaching experience, perception of effectiveness in own knowledge regarding ID, perceived support, promotion of positive attitudes towards ID.

Analyzed as a group, variables related to teacher-specific characteristics statistically increase the prediction of all ATTID dimension scores significantly only in special-education teachers compared to only two components (Knowledge of capacity and rights and Interaction) in mainstream teachers.

When attention is paid to variables traditionally studied in association with attitudes towards ID, compared to the amount of contact, the quality of the connection influences a more significant number of ATTID dimensions in both groups of teachers but especially in special-education teachers (for which it affects all ATTID dimensions except knowledge of capacity and rights). The quality of contact affects only the Discomfort, Interaction, and Sensitivity/Tenderness dimensions in mainstream teachers. Moreover, only in mainstream teachers, the quantity of contact allows predicting the scores of Discomfort.

However, there are significant differences between the two groups with regards to each ATTID dimension.

# *Cognitive Factor*

## Knowledge of Capacity and Rights

The data indicate that in mainstream teachers, there is a positive effect concerning age (that is, an older age predicts more negative attitudes) and a negative impact concerning the school level taught (i.e., mainstream teachers who teach at higher school levels have

more positive attitudes). In special-education teachers, there is no single effect specific to any of the areas but, considering the characteristics of teachers globally, they can contribute to the accuracy of predicting the score of special-education teachers in this dimension in a statistically meaningful way regarding teaching experience in both pupils without and with ID, and in pupils with severe ID, perceived support and promotion of positive attitudes towards ID.

This suggests that the years of experience in class, if not in contact with pupils with ID, can even lead, with time, to consolidate teachers' negative attitudes. On the other hand, these data may instruct us to think that the functional characteristics of individuals with ID can, over time, lead to a natural compensation, making attitudes towards them progressively more benevolent. In general, the time factor tells us that the number of in-service years of a mainstream teacher, who teaches in classes where pupils with disabilities are present, increases positive attitudes.

Although some shortcomings created by initial training do not favor a positive attitude on behalf of teachers, the data suggest the importance of teachers' hands-on experience.

### Knowledge of Causes of ID

About the knowledge of the causes of ID, the findings produced in the questionnaire show that there is a negative effect of the promotion of positive attitudes towards ID in both mainstream and special-education teachers. In support of teachers, this is especially true about the type of contact relationship, which, for this dimension, turns out to be a negative variable. Namely, more negative attitudes are predicted in a distant relationship with individuals with ID, which is the contrary in special-education teachers within the Sensitivity/Tenderness dimension.

Hence, it is not necessarily true that the more intellectually disabled individuals known, the more accepted and appreciated they are. On the other hand, it can be said that the greater the contact with them, the more one learns to comprehend ID. However, it should be remembered that the knowledge of the condition of disability in which the pupil lives is the result of the knowledge of several factors: the intertwined functioning of body functions and structures, activities, social participation, personal and environmental factors (WHO, 2001). If one circumscribes the person's identity to only one of these aspects, the knowledge produced is minimal.

## *Affective Factor*

### Discomfort

The findings reveal significant differences between the two groups, mainly concerning the negative effect of both the quantity and quality of contact with an individual with ID by the mainstream teacher (particularly in the variable "Quality of the contact relationship"), indicating that more positive attitudes are present in this category of teachers who have had a greater quantity and quality contact with ID. However, in special-

education teachers, there is only the negative effect of the quality of connection and the perception of the effectiveness of knowledge of ID. This indicates that more positive attitudes are present in special-education teachers who have a higher quality of contact with individuals with ID and a more excellent perception of the effectiveness of their knowledge regarding ID.

These data lead us to believe that contact with intellectually disabled persons reduces the feeling of Discomfort that teachers feel. Often the first experiences of contact occur in the family or a friendly environment. As the data show, the number of connections is not only the quality that makes the difference: quality is given above all by the knowledge regarding ID.

In this respect, traineeship for mainstream teachers must be carried out within classes where pupils with disabilities are also present. Suppose one considers the study pathways of university graduates in Primary Education or Teachers' Training Colleges/Institutes. In that case, no later than 2001/2002-qualification per the arrangements set out in the Italian legislation, entitling enrolment in the second tier of school rankings - it is clear that these encounters have not always been experienced.

## Sensitivity and Tenderness

Data that emerged about this dimension show that a negative effect in total support and ID training can be found (indicating that a longer duration of training predicts more positive attitudes). In special-education teachers, a positive effect in the type of relationship contact is also existent (i.e., more negative attitudes are indicated by a close contact relationship with a person with ID). In mainstream teachers, a negative effect on the quality of relationship contact (i.e., more positive attitudes are present in mainstream teachers who have better relationships with intellectually disabled individuals).

Special-education teachers who have had more contact experience with pupils with disabilities and, in most cases, specific training manifest more positive attitudes of sensitivity and tenderness. In our sample, 39% of the special-education teachers earned a master's degree, which means that many teachers engaged in support activities have not carried out specific training courses. According to the data, their attitudes towards pupils with intellectual disabilities could be influenced by positive and negative personal life experiences. When the training has been provided, the attitudes manifested are more optimistic.

# *Behavioral Factor*

## Interaction

A further interesting finding is that, in both mainstream and special-education teachers, an adverse effect of the quality of contact (specifically, the variable "Quality of the contact relationship") and the perceived support is reported. This indicates that teachers with higher contact qualities and higher perceived support levels also have more positive attitudes towards ID.

**Table 3. Summary Table of Main Results for Each Dimension.**

| Factor | Dimensions | Results |
|---|---|---|
| Cognitive | Knowledge of capacity and rights | Quantity of contacts. Prolonged and informed contact produces greater knowledge |
| | Knowledge of causes of ID | Quality of contacts. Closest contacts produce more knowledge |
| Affective | Discomfort | Increased quantity and quality of contacts decreases the feeling of discomfort |
| | Sensitivity/Tenderness | Increased quantity and quality of contacts increases the feeling of sensitivity and tenderness |
| Behavioural | Interaction | Higher contact quality and higher levels of perceived support produce more positive attitudes |

**Table 4. Summary Table of the Main Results for Each Dimension Related to the Characteristic Elements of the Current Training of Teachers.**

| Factor | Dimensions | Results | Current Training |
|---|---|---|---|
| Cognitive | Knowledge of capacity and rights | Quantity of contacts | Teaching pedagogical, medical and legal disciplines |
| | Knowledge of causes of ID | Quality of contacts | |
| Affective | Discomfort | Quantity and quality of contacts | Indirect traineeship |
| | Sensitivity/Tenderness | Quantity and quality of contacts | |
| Behavioural | Interaction | Quality of contact | Direct traineeship |

The resulting reflection is linked to the importance of the quality of the contact relationship. One of the elements that may significantly contribute to making a quality relationship reflects the practices, allowing observed reshaping behaviors.

Being in the relationship in an informed way promotes a greater understanding of the other and, consequently, a more positive attitude. The indirect traineeship that accompanies the specialized teacher's training path for support activities pursues precisely this purpose (**Table 3**).

# Discussion

The data collected suggests some reflections on the elements already present and missing that characterize, or should describe, teacher training to promote positive attitudes towards people with ID and disabilities in general.

# *Survey Results and Contents of Current Training*

The tripartite model of attitudes, together with the data emerging from this study, suggests essential content that should not be lacking in special-education teacher training in support activities for pupils and students with disabilities and teachers in general. The three components of the tripartite model of attitudes are presented below. We observed how the data emerged, propose an analysis of the already-existing elements in credited training pathways, and aim to enhance aspects that need strengthening (**Table 4**).

## The Cognitive Component

The Italian Decree No 30/2011 "Criteria and modalities for conducting training courses for specializations in support activities" (GU General Series n.78 of 02-04-2012) establishes a total of 288 hours of lessons (36 university credits) consisting of core courses related to different disciplinary fields. Accordingly, allowing participants to acquire psycho-pedagogical skills (M-PED/03, M-PED/01, M-PSI/04) as well as legal (IUS/09) and medical (MED/39) ones.

The cognitive component that underlies attitudes is represented in the ATTID questionnaire by two factors: knowledge of capacity and rights and knowledge of ID causes.

Teachers attending the special-education specialization course study the rights of disabled persons in conjunction with addressing primary and secondary legislation on school inclusion (IUS/09). About the knowledge of the causes of a particular disability, the study of Child Neuropsychiatry (MED/39) is investigated.

All within a psycho-pedagogical framework allow for understanding the state of health of individuals concerning their environments that is conducive to seizing positive skills and performance and the role of mediation of contextual factors and possible barriers (WHO, 2001).

Thereupon, it is of importance of acquiring a pedagogical overview to embrace the complexity of the situations and elements that characterize them.

Alongside the latter, embodied are the practices that allow, through appropriate reflective activities, to seize theoretical knowledge that guides and nourishes educational action.

The Decree, which establishes the means for conducting training courses within the specialization in support activities, provides the operational dimension (direct traineeship), moments dedicated to re-elaborating personal experience and organization of professional skills (indirect traineeship).

## The Affective Component

Two factors draw on the affective component: Discomfort and sensitivity/tenderness.

The feeling of Discomfort or feelings of tenderness, which, in some cases, may result in compassion, are elements that strongly characterize the type of attitude towards a person with an intellectual disability.

Studies show how the feeling of Discomfort may increase with the greater severity of the disorder (Sermier Dessemontet & Bless, 2013) or how particular physical and relational characteristics, typical in Down syndrome, may induce feelings of tenderness (Vicari, 2007).

In this respect, the role and importance of re-elaborating the professional experience, both from a personal and psycho-motivational point of view, play a fundamental role in forming future teachers and their attitudes.

People's actions result from an interaction between personal dispositions and conditioning posed by situations (Canevaro & Chieregatti, 1999). They are often driven by feelings of solidarity and altruism and are not always successful in understanding how the helping relationship is carried out within a rapport, precisely, a relationship (Haddock & Zanna, 1993).

The unexpressed desire to "feel useful" or "do good" may sometimes be concealed behind the desire to help someone. However, these two factors may not produce positive effects on the person to whom the help is directed. There is the possibility of meeting closure and even endanger the person's self-esteem by triggering attitudes of rejection and hostility (Canevaro, 2018).

On the other hand, it is vital to become aware of stereotypes and prejudices and have the courage to evaluate, size, and overcome them. One must remain inside a co-evolutionary relationship that keeps everyone inside.

"It is not enough to help or teach: the time has come to co-develop, to create and change together, each while remaining in our sphere and preserving our roots" (Canevaro & Chieregatti, 1999, pp197).

## The Behavioral Component

In the ATTID questionnaire, the behavioral component emerges as a single factor.

Behavior can be defined as the mirror of attitude, which is revealed precisely in action.

Analyzing educational processes in the complexity of classroom contexts enables clarifying a series of acts involving teachers and students and permits teachers to observe and reflect on the attitude that produced a given action. Subsequently, orienting choices and decisions, which have in the meantime, become increasingly more conscious, creates, over time, an improvement of the practice itself. The teacher's awareness of the effectiveness of mediations put in place induces her/him to consider them, especially in subsequent courses.

Decree No 30/2011 focuses on practice, proposing laboratory activities favoring cooperative and collaborative learning methods, research-action, and metacognitive learning. The teacher is thus placed to experiment through: group work, simulations, insights, applied experiences in actual or simulated situations, and related to training activities in critical disciplinary areas and class management.

The use of new technologies applied to special education (TIC) is used in professional practice, although, if ill-employed, it can become an amplifier for any possible

stigmatizing behaviors. To optimize teaching and learning processes, understanding positive elements that strengthen, and critical ones that require improvement, becomes fundamental.

## *Proposals for Improving Current Training*

As is shown by research, attitudes have a significant impact in terms of bearings and applied practices (De Boer et al., 2011).

In terms of professional skills, both the mainstream and special-education teacher is called to vigorously exercise the reflective dimension (Fabbri et al., 2014).

The cultural environment of every professional community consists of explicit knowledge, well declared, and socially recognizable along with a more tacit, implicit, but equally significant background that acts as a silent scene to every action and unconditionally dictates a system of instructions for understanding, meaning, and working (Polanyi, 1979; Schön,1993; Becchi, 2005).

Explicit and implicit knowledge guides thinking and action in a cognitive economy functional to knowledge that does not need to start from scratch every time. If detailed knowledge constitutes the shared and declared knowledge of a working group, codified and expressible through a systematic and formal language, the implicit is a sort of practical unconscious (Perrenoud, 2001). An unknown universe made of "affections, tensions, dilemmas, assumptions of common sense, beliefs, naive epistemology, abductive reasoning strongly connected with the image of self and with social existence" (Perla, 2010, pp7-8).

Reflecting on the life of the declared and tacit mind, the cognitive processes of which educational professionals mean their own lives, become central in education to comprehend the weight of their singular knowledge maps and avoid forms of cognitive imprisonment.

"Understanding how an educational situation works means tracing the device that is in progress: the latent lines and trajectories of these relationships that change over time" (Palmieri, 2018, pp116).

A professional's task is then to label their unique maps to gradually recognize the boundaries between data and information, between the subjects that accompany each other and the ideas we have of them. No teacher starts a new adventure as if it were a tabula rasa but carries an experienced and imagined warehouse of personal and professional ideas. Summoned together, they intertwine explicit and implicit individual plots. We are our thoughts, "we have in common a tangle of pre-assumptions, many of which have ancient origins" (Bateson, 1997, pp439), many are existential, professional, and cultural.

An educational relationship is, therefore, existent beyond the doing and the relationship. Quality makes it possible to imagine that communication alongside action can be placed within a reflection both in terms of self-awareness and of planning. For the past to become experiences, endowed with meaning and able to draw evolutionary

trajectories, it is necessary to be "pensively present" (Mortari, 2013, pp17), reflect on both the actions and thoughts.

Reflective practice feeds upon specific tools and moments that become necessary to avoid cognitive shortcuts that would likely show us only what we are looking for or confirm our assumptions at the expense of authenticity of identities. In this sense, reflexiveness becomes a fundamental tool for formulating new, distinct questions and answers. It motivates us to gather further readings and interpretations of reality without falling into the temptation to squander and overlook, creating a virtuous circle of research and action. Since every educational relationship is composed of uniqueness, temporality, and locality, the meaning of searching is not to accumulate knowledge but admit with humility that, as others and relationships are outside us, it is not accessible to our knowledge.

To nourish the reflective dimension, the inclusive teacher is called upon to exercise observation, documentation, and collegiality skills.

Observation as a research method and technique consists of a complete description of the characteristics of behavior, event, or situation. Guided by the maps of those who practice it, both in epistemological and methodological terms, it is an emotional moment that, alone, does not have sufficient coordinates to be considered knowledge. Placing itself between the perceptual moment of looking and the hermeneutic one, it is always a selective and intentional process, guided and oriented by hypotheses, expectations, and theoretical frameworks. Beyond the choice of the method and the tools, observation is a descriptive practice, called upon later, spaced and preferably socialized, enriched with interpretative constructs. An accurate observation is aware of its partiality and perfectibility, but it is also eager to open up to as many points of view as possible, allowing selected accounts to become meaningful narratives, never complete but most certainly shared. It is the work of analysis and not synthesis, which helps to seize the positioning of the educator, the actual distinction between recorded events and impressions, evaluations, and comments. Observing is an opportunity to stop (Fontaigne, 2017): the to-do-race is suspended while proposals and activities are questioned. Do they make sense, and are they placed within a frame of thought and plan? To give oneself opportunities with not only observational attitudes, a chance to encounter students in an authentic way, in addition to a formative moment to question time and educational proposals.

Writing and documenting allows collecting data, appointing devices, accommodating paradoxes of possible different interpretations, measuring the changes in one and others (Biffi, 2014). Journal writing, in particular, is an "organizer of surprises" (Cocever & Chiantera, 1996, pp23) insofar as it assumes the characteristics of being joining, hypothetical, negotiating, and interrogative. As a daily practice, it amplifies observational and analysis skills, allowing one to label thoughts and experiences, document experience, and make it available for consequential meanings and/or reflections. Documenting is an opportunity to nourish a cognitive memory (Canevaro, 1996), allowing students to be seen, recognized, and narrated and assume the responsibility to declare the selection criteria for what is considered significant and not.

**Table 5. Summary Table of the Main Results for Each Dimension Related to the Characteristic Elements of the Current Training of Teachers and The Aspects to be Strengthened.**

| Factor | Dimensions | Results | Current Training | Improvement Proposals |
|---|---|---|---|---|
| Cognitive | Knowledge of capacity and rights | Quantity of contacts | Teaching pedagogical, medical and legal disciplines | Reflective practice |
| | Knowledge of causes of ID | Quality of contacts | | |
| Affective | Discomfort | Quantity and quality of contacts | Indirect traineeship | Documentation |
| | Sensitivity/Tenderness | Quantity and quality of contacts | | |
| Behavioural | Interaction | Quality of contact | Direct traineeship | Observation |

What we document is a choice among many others. The descriptions that are produced, the categories that are applied, and the interpretations attributed to meaning are impregnated with beliefs, classifications, categorizations, declared or tacit.

The possibility of counting on mature collegiality indeed nourishes a reflection that avoids some methodological slips that often produce non-authentic practices, such as the exclusivity and non-negotiation of interventions.

To be a working group, it is not sufficient to just share a pedagogical culture, often not even so sharp and conscious, but to build together "a way of acting with a method, and, at the same time, a way - contingent and changeable - to make and be part of a working team" (Palmieri, 2018, pp180). Teamwork enhances individual and unique differences; it allows those with more ample professional experience to savor the generosity of sharing. It favors the possibility of expression, tenacity towards possible and sustainable horizons, calmness, lightness, along with humor. Above all, intersubjectivity is the space of discovery that consists of many different points of view in which situations are framed. Collegiality is an expression of the necessity of a time and space to "say things," to name them, to experience cognitive dissonance, to change one's position, if points of view urge to do so.

Observation, writing, documentation, and collegial work are professional tools that allow us to interrogate thoughts to understand how polluted they are with predetermined or implicit ideas, which do not account for a change of outlook and practices (**Table 5**). They are pensive maintenance tools that prevent falling into cognitive shortcuts that do not recognize the weight of attitudes and "raw" knowledge in the encounter and relationship with each other (Dessemontet & Bless, 2013).

# Conclusions

The inclusive dimension strongly requires professionals who are able to exercise reflective thinking. To recognize and acknowledge each student's singularity, the school system needs to avoid technical slip downs that seem to request the execution of tasks mainly and, in a residual, discrete way, calls for thought and planning. It is about making a fundamental choice, essential within educational contexts: to be teachers seeking answers or teachers capable of becoming explorers of queries and walk crossroads instead of beaten tracks (Manghi, 1990).

"In the context of training, it is then necessary to weaken subordination to the imperatives of our time and have the courage to make room for and enhance other unprecedented and outdated cultural practices. In practical training, to think for oneself, starting from oneself, in other words, professional experience must be recognized as the backbone of the practice. Starting from oneself implies having the courage to subtract thinking from the already known versions of the world, and from the reassuring territories of already-defined paradigms, and risk searching other scores of thoughts" (Mortari, 2011, pp21).

It is, therefore, vital to enhance laboratory experiences and indirect traineeship during training, promote self-awareness, label assumptions, ascertain adequate knowledge, and draw attention to urgency in professional terms. In terms of school policies, institutional conditions must be created to continue to question the life of the mind and the individual spaces obtained with intention and motivation by each teacher. The possibility to render collegiality opportunities more significant on the one hand and simultaneously activate contexts of supervision and pedagogical advice (Negri, 2014; Oggionni, 2013; Palma, 2017) could be possible work paths that recognize that all actors, in the construction of authentically inclusive contexts, have a responsibility starting from the ideas they express to the practices that they enact upon.

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REVIEW

# The Impact of Flipped Classroom on College Students' Academic Performance: A Meta-Analysis Based on 20 Experimental Studies

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***Abstract**: The flipped classroom is one the most popular teaching models in recent years. Domestic and international scholars have carried out many experimental and quasi-experimental studies to explore the impact of flipped classroom on students' academic performance, but the results are mixed. To further explore the impact of flipped classroom on college students' academic performance, this paper adopted the meta-analysis method to quantitatively analyze 20 domestic and international experimental studies of flipped classroom. We found that: i) The flipped classroom positively affected college students' academic performance, and the overall combined effect size was 0.66; ii) Effect sizes vary somewhat by subject types. For example, effect sizes for science, liberal arts, and engineering were 0.75, 0.72, and 0.34, respectively; iii) The flipped classroom had the same effect on the learning effect of different knowledge types, but practical knowledge learning was better than theoretical knowledge; and iv) The flipped classroom had produced significant impact on different class sizes, particularly medium class size.*

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# Background

IN traditional teaching, teachers mainly teach. Teachers are the center of teaching and classroom. Students passively accept the knowledge imparted by teachers, and do not truly master the learning. The flipped classroom can enable teachers to change the traditional instillation teaching and become instructors and helpers.

Flipped classrooms, also known as "inverted classrooms," started in the United States at the end of the 20th century and made substantial progress at the beginning of the 21st century. In 2000, American scholars Lage, Platt, and Treglia (2000) published an article titled "Inverting the classroom: A gateway to creating an inclusive learning environment." They proposed to use flipped classroom in the introductory economics course at the University of Miami to activate differentiated teaching and adapt to the different learning styles of different students. In the same year, "The 'Classroom Flip': Using web course management tools to become the guide by the side" in which he proposed the flipped classroom teaching model for the first time (Baker， 2000). Beginning in the fall of 2000, at the University of Wisconsin-Madison, teachers began to use e-Teach streaming video to teach computer science courses. Students watch instructional videos on the Internet, while the classroom is mainly based on answering questions and solving puzzles instead of the traditional classroom teaching method. In 2007, Jonathan Bergmann and Aaron Sams, two chemistry teachers at Woodland Park High School in Colorado, USA, used screen recording software to make PowerPoint presentations and lectures in order to help students who were unable to keep up with their academic progress due to absent classes. They put them on the school's public platform so that students could study at home. This form of teaching was also widely welcomed among students who were not absent. Later, many teachers began to apply this new teaching model to their classrooms (He, 2014). Because of the beginning of two middle school teachers, the flipped classroom entered the middle and elementary school classrooms. In 2011, Salman Khan founded the Khan Academy to provide teaching videos, online exercises, online assessments, and other contents, which also provides a basis for the application of flipped classrooms. This has aroused great attention from global educators on flipped classrooms.

Different scholars explain the concept of flipped classroom from different angles. For instance, Strayer's definition of flipped classroom takes the transformation of the traditional classroom teaching process as the starting point to define the new model, new process. That is to say, students can preview their knowledge by watching teaching videos or other electronic materials before class. Students can learn through cooperative and independent learning methods during the class, allowing students to fully interact and collaborate and consolidate knowledge (Strayer, 2012). Hamdan et al. (2013) believed that flipped classroom is a teaching method that transfers the direct teaching behavior space to the private teaching space. The teacher's role is the instructor and a teaching model that uses a dynamic and interactive learning place, group discussion as a teaching space. Bishop and Verleger (2013) summarize the flipped classroom as a pedagogical technology that includes interactive group learning activities and computer-

based personalized teaching outside the classroom. Research on flipped classroom in China started relatively late. Before the flipped classroom was introduced to China, some Chinese schools and scholars had already explored the Chinese-style "flipped classroom." One of the first schools that experimented flipped classroom teaching was Chongqing Jukui Middle School. In 2012, Zhang Yujiang, an information technology teacher in this middle school, after drawing lessons from the American flipped classroom teaching reform model, combined with the actual situation of the school, proposed the "four steps before class" and "five links in class" basic flipped classroom model (Zhang & Li, 2012). Besides, more typical was the "problem-oriented autonomous learning model" of the political discipline of Jiangsu Mudu High School in the 1980s, the "Learn first and then teach, practice in class" in Jiangsu Yangsi Middle School, the "3-3-6" model of Shandong Dulangkou Middle School, and the "Self-study: Demonstration Mode" of Xinjiang, Yuncheng, Shanxi Province (Wang et al., 2013).

Chinese scholar Professor Zhong Xiaoliu of Tsinghua University and others believe that flipped classrooms are in an information environment where course teachers provide learning resources in teaching videos. Students complete the learning of learning resources before class, and teachers and students complete homework Q&A, collaborative exploration, and interactive communication activities together in class (Zhong et al., 2013). Zhu Hongjie of Nanjing Normal University believes that teachers create flipped classroom, students study at home or outside class and then return to the classroom for face-to-face sharing and exchange of learning results and experiences between teachers and students, students and students, in order to achieve teaching goal (Zhu & Zhu, 2013). Shandong Changle No. 1 Middle School is based on Bloom's mastering learning theory, and based on the original teaching reform results, built an online teaching system based on a digital learning platform, classroom wireless APs and students' personal tablet computers, forming a "two stages, four steps and ten links" flipped classroom model (Dong & Guo, 2014). In August 2013, now led by the MOOC Center of East China Normal University, 20 well-known domestic universities have established the C20 MOOC Alliance. Subsequently, the junior high and elementary school MOOC alliance was established, which significantly promoted the practice of flipped classrooms in China (Zhang, 2015).

The flipped classroom reverses the teaching process of the traditional classroom. The roles of teachers and students have changed: teachers have changed from the lecturers to the instructors, and the status of students in learning has changed from passive to active. Students use learning resources to study in advance before class and solve problems under guidance during class (Li et al., 2018).

The flipped classroom is a brand-new, deep-level blended learning model. It is a high degree of integration of traditional classroom teaching and online learning in form, means, and content and a mixture of different teaching concepts, learning concepts, and teaching modes. The flipped classroom uses online learning methods to allow students to choose learning resources and self-paced according to their specific learning situation. If knowledge transfer is completed before class, teacher can then use classroom time and classroom learning activities to help and guide students complete

knowledge's internalization The breakthrough change in the form of flipped classroom, in a sense, can genuinely realize the dominance of teachers' teaching and the exertion of the subjectivity of students' learning; promote the improvement of students' learning effects and the improvement of teachers' teaching efficiency, and significantly save the time of knowledge acquisition (He, 2014).

Although scholars at home and abroad have many flipped classroom definitions, they all believe that flipped classroom is a new type of classroom teaching mode that subverts the traditional teaching model. The flipped classroom aims at student development, highlights students' primary role, improves students' hands-on ability, broadens students' horizons, enhances students' learning enthusiasm and initiative, and changes students' learning attitudes and ways of thinking, and improves students' problem-solving skills ability.

# Is the Flipped Classroom More Effective for Students?

Whether in academic research or teaching practice, flipped classroom has become a hot issue in the education circles at home and abroad. The impact of flipped classroom on students' learning has aroused many scholars' attention. However, the research results are somewhat mixed, making it difficult to explain the flipped classroom's theoretical research. The current research has the following three conclusions: i) Compared with traditional classroom teaching, flipped classroom teaching can significantly improve students' academic performance (some references). ii) The effect of traditional classroom teaching is significantly better than that of flipped classroom (some references). iii) There is no significant difference between the flipped classroom and the traditional classroom on students' academic performance (some references).

## *Flipped Classroom is Superior to the Traditional Classroom.*

Many scholars believed that compared to traditional classrooms, flipped classrooms have a positive impact on student learning. Thai and others from the Department of Educational Research at Ghent University in Belgium used the "invertebrate science" course in the second year of undergraduate studies to conduct experimental research. The results showed that the test scores of students who adopt the flipped classroom teaching method were significantly higher than those of the classroom teaching group (Thai et al., 2017). Casasola of the University of California, USA, took 547 undergraduate students majoring in chemistry as the research objects. Through quasi-experimental design research, they found that the student's performance in flipped classroom teaching was significantly higher than traditional classroom teaching (Casasola et al., 2017). Chinese scholar Lei Xing et al. (2015) conducted experimental research on two "College Physics" courses. It was found that the grades of the class using flipped classroom teaching improved significantly than the class using traditional teaching.

## *Traditional Classroom is Better Than Flipped Classroom.*

Although some studies have shown that flipped classroom teaching is significantly better than traditional classroom teaching (van Alten et al., 2019; Jang & Kim, 2020; Lo et al., 2019), some scholars have also questioned that traditional classrooms are superior to flipped classrooms in teaching some knowledge points. Foreign scholar Pi and Do selected students who participated in the two classes of "English Grammar and Writing for College Students" as experimental subjects and analyzed the experimental data using an independent sample t-test. The study found that the students' post-test results in the flipped classroom teaching group were lower than the pre-test results, while the students in the traditional classroom teaching group improved and reached a statistically significant level. It shows that the traditional classroom's overall teaching effectiveness in the "University English Grammar and Writing" course is better than the flipped classroom (Pi & Do, 2017). Chinese scholar Wentao He selected two parallel classes in the Vocational and Technology College traditional classroom's overall teaching effect experimental research objects. In the course of "C language programming," the flipped classroom teaching experiment was carried out to test the academic performance of the students in the modules of "C language knowledge concept," "analysis program," "debugging program," and "programming" module. The research results showed t, "t in the "C language knowledge concept" module, students in the traditional classroom group had higher learning love performance than the flipped classroom group. It showed that in terms of emphasizing conceptual knowledge, the effect of flipped classroom was not as good as that of the traditional classroom (He, 2014). Also supporting this view was the research of scholar Xiulin Ma and others. She applied the flipped classroom model to "College Information Technology" courses to test students' skills in "Computer Knowledge," "Win Application," "Word Processing," and "Network Application." It was found that in the "Computer General Knowledge" module, the traditional teaching model was better than the flipped classroom model (Ma et al., 2013).

## *No Difference between a Flipped Classroom and a Traditional Classroom.*

Some scholars hold a neutral attitude and believe that flipped classroom teaching and traditional classroom teaching have no significant difference in students' academic performance. American scholar Clark used quasi-experimental methods to compare the effects of flipped classroom teaching and traditional classroom teaching on middle school students' mathematics performance. The study results found no significant difference in students' academic performance under the two classroom teaching modes (Clark, 2015). The American scholar Gloudeman explored the flipped classroom's impact on medical students' academic performance through comparative experiments. The study found that there was no significant difference in test scores between the experi-

mental group (flipped classroom) and the control group (traditional classroom) (Gloudeman et al., 2018). Scholar Ojennus selected two parallel classes in the "College Biochemistry" class to explore the impact of the two teaching methods on students' learning using experiments. Research results show that the two teaching methods have the same effect on students' academic performance (Ojennus, 2016). Smallhorn applied the flipped classroom teaching to the "University Biology" course and selected the knowledge points of genetics, evolution, and biodiversity to explain. Experimental results show that flipped classrooms can improve students' motivation to learn, but there is no significant academic performance difference than in the traditional classroom (Smallhorn, 2017). Chinese scholar, Huadong Yin's research on the flipped classroom teaching found no significant difference between flipped classroom teaching and traditional classroom teaching on students' academic performance (Yin, 2016).

Through the research mentioned above conclusions of domestic and foreign scholars, it can be found that as to whether the flipped classroom can significantly improve students' academic performance, no unified conclusion has been reached so far. Based on this, this study attempts to explore the following questions through scientific analysis methods:

(i) Compared with the traditional higher education, is the flipped classroom more effective in improving students' academic performance?
(ii) Does the flipped classroom affect students' academic performance in different college level? If yes, how big is it?
(iii) If the flipped classroom has a positive effect on student performance, what are the conditions for effective use of flipped classroom teaching?

This article collected specific samples based on consulting a large amount of literature and exploring this with scientific and rigorous research methods to answer the above questions.

# Research Methodology and Procedures

Traditional literature analysis methods are mainly based on qualitative analysis or description. Traditional studies are challenging to give a quantitative and reliable conclusion, and some did not consider the impact of the quality of the research and the size of the sample on the conclusion. As the number of studies continues to increase, the probability of reaching a biased conclusion also increases. The use of meta-analysis applies specific design and statistical methods to the overall and systematic qualitative and quantitative analysis of previous research, which improves traditional research (Xia, 2005). We have collected studies on flipped classrooms at home and abroad and aimed to use meta-analysis to evaluate the impact of flipped classrooms on students' academic performance and explore flipped classroom teaching effectiveness.

## *Methods*

Meta-analysis is a concept first proposed by educational psychologist Gene Glass. It is a research method that integrates research results and uses statistical methods to analyze multiple related independent research results (Glass, 1976). However, traditional descriptive literature reviews are mostly reviews without comments, and quantitative and comprehensive analysis of these research conclusions cannot be made (Cui & Ning, 2010).

Meta-analysis makes up for the inconsistency of conclusions on the same research topic: the insufficiency of the research object, research environment, and other factors, as well as the researcher's reasons. It uses systematic methods to synthesize seemingly inconsistent or conflicting results from different studies quantitatively. Effect size is the key to meta-analysis. It standardizes research results for direct comparison (Lipsey & Wilson, 2001). In this study, Standardized Mean Difference (SMD) is used as the effect size to indicate the impact of flipped classroom on academic performance.

# *Procedures*

## • Selection Criteria

Meta-analysis needs to determine the literature inclusion criteria according to the research purpose, research content, and statistical requirements (Borenstein et al., 2009). Combined with the US based "What Works Clearinghouse" (WWC) experimental standards, this study developed the following selection criteria:

(i) The studies must examine the impact of flipped classroom on student performance, and flipped teaching is used as the primary research independent variable.

(ii) The studies must be experimental research or quasi-experimental design with pre-test and post-test data. Studies with pretest difference of more than 50% of standard deviation are excluded.

(iii) The studies must include sufficient statistics such as sample sizes, means, and standard deviation to calculate the effect size.

(iv) Participants of the studies must be college students at higher education institutions. The sample size is more than 25 people, and the two groups' sample sizes are similar to ensure the experiment's accuracy.

## • Literature Retrieval and Screening

Based on Google Scholar and China National Knowledge Infrastructure (CNKI) databases, with flipped classroom and student performance as keywords, the time is set from 2000 to 2020, a total of 136,890 articles were searched. First, screen the titles of the literature, and then (i) exclude duplicate titles; (ii) exclude inconsistent titles without flipped classroom research; (iii) read the abstract after downloading the literature, and exclude no empirical research in the abstract; (iv) read the literature in batches, and exclude articles without experimental research; (v) read the full text of relevant research, and exclude articles without pre-test data in the experiment; (vi) re-search the selected

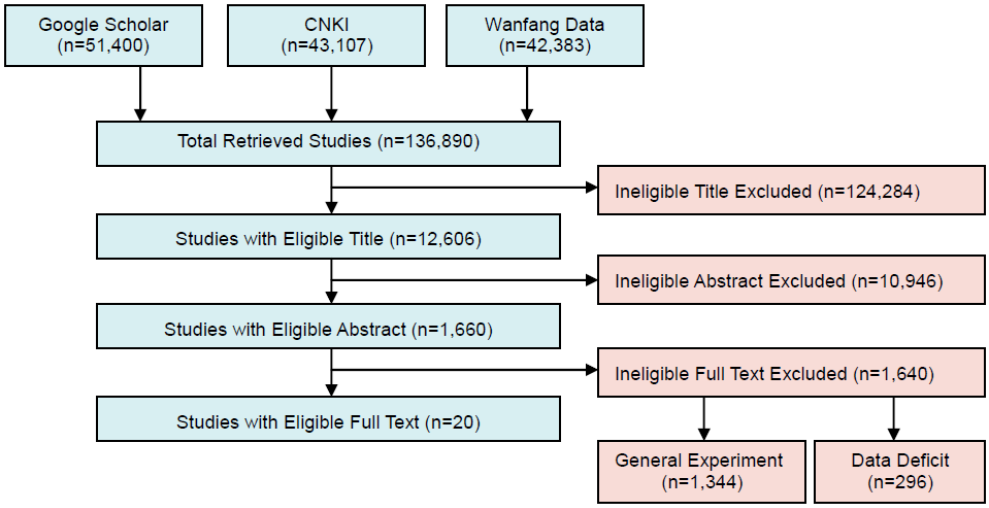


**Figure 1. Flow Chart of Literature Retrieval and Screening.**

**Table 1. The Overall Impact of Flipped Classrooms on Student Learning.**

| | Effect size and 95% confidence interval | | | | | Heterogeneity | | | |
|---|---|---|---|---|---|---|---|---|---|
| Model | # of Studies | Effect Size | SMD | Lower Limit | Upper Limit | Q-Value | Df (Q) | p | $I^2$ |
| Fixed | 20 | 28 | 0.62 | 0.54 | 0.695 | 108.377 | 27 | 0.000 | 75.087 |
| Random | 20 | 28 | 0.66 | 0.502 | 0.82 | | | | |

literature, discuss with the group, and finally screen out the standard documents that meet the requirements.

According to the selection criteria, a total of 20 studies finally met the requirements. Twenty-eight sets of data can be used for analysis (some research samples contain multiple sets of data). The literature retrieval and screening process are shown in **Figure 1**, and the literature screening information is shown in **Table 1**.

## • Eigenvalue Coding

After the literature search and screening are completed, in order to facilitate later analysis and statistics, a three-person blind coding form is adopted to code the eigenvalues of

the documents included. The coding objects are the authors of the literature, the year of publication, the number of samples, the experimental subject, the type of knowledge, and the experimental method. According to the three disciplines of liberal arts, science, and engineering, the knowledge type is theoretical and practical. The theoretical type mainly teaches declarative knowledge such as concepts, rules, facts, and principles, and the student's mastery of the knowledge is tested through test papers. The suitable type is to teach procedural knowledge such as skills, experience, and operating procedures. The emphasis is on the ability of students to apply the knowledge they have learned to practice. The test is generally a computer operation or an operation display (Li et al., 2018). See **Supplemental Table 1** for the meta-analysis literature information used for statistical analysis.

## • Data Analysis

This article uses CMA3.0 (Comprehensive Meta-Analysis 3.0) software as a data analysis tool. The specific analysis used for the publication bias, heterogeneity test, and effect size.

# Results and Analysis

A total of 20 studies and 28 sets of data met the inclusion criteria. Liberal arts accounted for 64%, and science and engineering were 36%. The knowledge type accounted for 57% of the theoretical type, and the knowledge type accounted for 43% of the practical type. Small-sized classes accounted for 32%, medium-sized classes accounted for 29%, and large-sized classes were 39% in terms of sample size. The specific analysis results were as follows:

## *Heterogeneity Test*

Heterogeneity testing is another core work of meta-analysis. According to the statistical principle of meta-analysis, only good homogeneous data can be combined for effect size. However, due to differences in the research sample size, evaluation criteria, and research methods obtained by meta-analysis, it is necessary to test the results of multiple studies for heterogeneity to select an appropriate effect model based on the heterogeneity results analysis. When the research's heterogeneity is significant, the random effect model is used for analysis; when the research's heterogeneity is small, the fixed-effect model is used (Li et al., 2018).

Commonly used methods of heterogeneity testing include the Q test and I2 test. The inspection level of Q inspection is usually set to 0.10. If the heterogeneity test results $p > 0.10$, it can be judged that multiple studies are homogeneous, and then the fixed effects model can be selected. If the heterogeneity test result of multiple studies is $p \leq 0.10$, it can be judged that multiple studies are not homogeneous, and the random-effects model is used (Borenstein et al., 2009).

The $I^2$ statistic is a supplement to the heterogeneity results of the Q test. It can give clearer results. When $I^2 = 0\%$, it indicates that there is no heterogeneity between studies. When $I^2 < 25\%$, there is slight heterogeneity. When $25\% \leq I^2 < 50\%$, there is moderate heterogeneity. When $I^2 > 50\%$, it is considered to be highly heterogeneous (Higgins et al., 2003).

**Table 1** shows the combined effect size of the 20 included studies. The test results of sample heterogeneity showed that $Q = 108.377$, $p = 0.000$ ($p \leq 0.01$), $I^2 = 75.087\%$ ($I^2 > 50\%$), indicating that there is a large heterogeneity between samples. Therefore, we used a random-effects model for data analysis.

## *The Effect of Flipped Classroom on Student's Academic Performance*

To examine the overall impact of flipped classroom on students' academic performance, the selected literature was assembled into 28 sets of research data, and the random-effects model was used to analyze the flipped classroom teaching (see **Table 1**).

According to **Table 1**, the combined effect size SMD of the included study was 0.66. According to Cohen's statistical theory of effect size, the study produced a moderate effect. It can be seen that the flipped classroom is conducive to improving students' academic performance and has a positive impact on students' academic performance.

## *The Impact of Flipped Classroom on Different Subject Types*

Different disciplines have their characteristics. Liberal Arts are also called humanities and social sciences. The learning content is mainly written narrative, requiring a wide range of knowledge, with emotion as the guidance, using events to evaluate characters and meaning to evaluate events, with solid perceptual awareness. Most of the science learning content is partially vectorized research, based on data, logical judgments, and solving problems with rigorous reasoning methods, which belong to natural sciences. The engineering department emphasizes application, pays more attention to practical application and experience (experiment) and applies science and technology principles to solve problems. So, does the flipped classroom have an impact on all subject types? What is the impact on different disciplines? Statistical analysis of the impact of flipped classroom on different disciplines is shown in **Table 2**.

According to **Table 2**, we can see that the combined effect size test of the three subjects of liberal arts, science, and engineering was $p = 0.000$ ($p < 0.05$), reaching a statistically significant level, which indicates that the flipped classroom has a positive impact on students of different types of subjects. From the perspective of the between-group effect test, the difference between the three subjects of liberal arts, science, and engineering showed $p = 0.008$ ($p < 0.05$), indicating that the flipped classroom has different effects on the learning of different subject types. From the perspective of specific

**Table 2. The Impact of Flipped Classrooms on Different Subject Types.**

| Subject | # of Studies | Effect Size | 95% Confidence Interval | | Intergroup Effect Size | |
|---|---|---|---|---|---|---|
| | | | Lower Limit | Upper Limit | QBET | p |
| Engineering | 6 | 0.34 | 0.153 | 0.533 | 9.583 | 0.008 |
| Liberal Arts | 4 | 0.72 | 0.085 | 1.356 | | |
| Science | 18 | 0.75 | 0.571 | 0.925 | | |
| Combined Effect Size Test | Z = 8.733, p = 0.000 | | | | | |

**Table 3. The Impact of Flipped Classrooms on Different Types of Knowledge.**

| Knowledge Type | # of Studies | Effect Size | 95% Confidence Interval | | Intergroup Effect Size | |
|---|---|---|---|---|---|---|
| | | | Lower Limit | Upper Limit | QBET | p |
| Theory | 16 | 0.63 | 0.437 | 0.823 | 0.189 | 0.664 |
| Practice | 12 | 0.70 | 0.431 | 0.977 | | |
| Combined Effect Size Test | Z = 8.137, p = 0.000 | | | | | |

**Table 4. The Effect of Flipped Classroom on the Performance of College Students of Different Class Sizes.**

| Class Size | # of Studies | Effect Size | 95% Confidence Interval | | Intergroup Effect Size | |
|---|---|---|---|---|---|---|
| | | | Lower Limit | Upper Limit | QBET | p |
| Large | 11 | 0.66 | 0.373 | 0.945 | 3.286 | 0.193 |
| Medium | 9 | 0.52 | 0.342 | 0.696 | | |
| Small | 8 | 0.81 | 0.546 | 1.065 | | |
| Combined Effect Size Test | Z = 9.344, p = 0.000 | | | | | |

discipline types, engineering had a combined effect size of 0.34, liberal arts had a combined effect size of 0.72, and science had a combined effect size of 0.75, and its combined effect size was ranked as follows: science > liberal arts > engineering. It suggests that the flipped classroom is more helpful to science students.

## *The Impact of Flipped Classroom on Different Types of Knowledge*

Do different types of knowledge have different effects on students' academic performance? Is the application of flipped classrooms in practical classrooms better than in theoretical classrooms? We divided the knowledge types into theoretical and practical types, and the analysis is shown in **Table 3**.

It can be seen from **Table 3** that the combined effect size of theoretical knowledge and practical operation learning scores were both positive, and the combined effect size test $p = 0.000$ ($p < 0.05$), which was significant. It can be seen that the flipped classroom had a moderately positive effect on the academic performance of different types of knowledge. From the inter-group affect test results, $p = 0.664 > 0.05$, which did not reach the significant level. Therefore, no significant difference existed in the impact of flipped classroom on academic knowledge and practical performance. In terms of specific effects, the combined effect of academic knowledge (SMD = 0.63) and practical knowledge (SMD = 0.70) were very close. Studies have shown that flipped classrooms have good application prospects for theoretical knowledge teaching and practical knowledge teaching, improving and enhancing academic performance.

## *The Impact of Flipped Classrooms on Classes of Different Sizes*

To examine the impact of flipped classrooms on the performance of students of different class sizes, we divided the sample size of students into three categories: small-scale, medium-scale, and large-scale class size according to the class size of public schools in China. The analysis is shown in **Table 4**.

From **Table 4**, the combined effect size of students' academic performance in small, medium, and large-sized classes were all positive, and the combined effect size test $Z = 9.344$, $p = 0.000$ ($p < 0.05$), reaching a significant level. This result shows that flipped classroom teaching has a moderately positive effect on student learning regardless of the class size. From the perspective of the effect size between groups, $QBET = 3.286$, $p = 0.193 > 0.05$, and it can be seen that the flipped classroom has no significant difference in the effect of large, medium, and small-sized students academic performance. In terms of specific effects, the combined effect size of small-sized classes (SMD = 0.52), the combined effect size of large-sized classes (SMD = 0.66), and the combined effect size of medium-sized classes (SMD = 0.81). This shows that compared

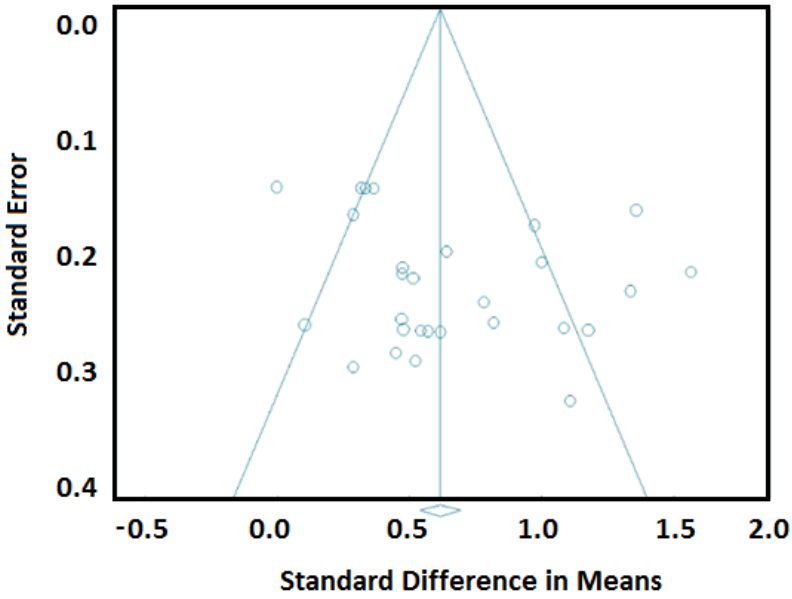


**Figure 2. Funnel Plot of the Publication Bias Test.**

to the impact of small-scale flipped classrooms and large-scale flipped classrooms, medium-scale flipped classrooms' impact is more obvious.

## *Publication Bias Test*

Bias, also known as a systematic error, refers to the deviation between research results or inferred values and actual values. If the published research literature cannot systematically represent the totality of research completed in the field, it is considered that publication bias has occurred. If there is publication bias, the meta-analysis results may be at risk of amplifying the actual effects of interventions (Rothstein, 2005).

Publication bias is an essential factor affecting the reliability of research results. Therefore, testing it is an indispensable part of the meta-analysis. Due to the small sample size in this study, to ensure the flipped classroom research results' scientific characteristics, the funnel plot combined with the Egger test method was used to perform publication bias on the included research samples. The result is shown in **Figure 2**.

From **Figure 2**, the sample effect size of the included study is symmetrically distributed on both sides of the average effect size, indicating that the publication bias of the study included in this study was unlikely. To avoid the subjectivity of the funnel plot, the study combined the Egger method to test further. If the result shows $t < 1.96$, $p > 0.05$, there is no significant publication bias between the studies (Begg & Mazumdar,

1994). The result showed that t = 1.54, p1 = 0.07, p2 = 0.14. Both the research data and the funnel plot indicated that the flipped classroom studies we included were less likely to have publication bias, and the combined effect size obtained was relatively robust and reliable.

# Discussion and Conclusions

Compared with the traditional classroom teaching model, flipped classroom impact on student performance is significant regardless of class size. It shows that flipped teaching has a significant positive correlation with student performance, which is more conducive to students' development, and the medium-sized effect is the best. However, flipped teaching is also affected by many factors. It reflects the following aspects explicitly:

## *The Flipped Classroom is Significantly Related to Student Academic Performance*

Our study showed that flipped classroom is positively correlated with students' academic performance, with a combined effect size of 0.66, which moderately positively affects students' academic performance. This result is consistent with the research results of Gao (2017), Li (2018), Cheng (2019), and Zhou (2020). Our study examined the relationship between flipped classroom and college students' academic performance. According to the research results, it can be inferred that the impact mechanism between the two may be: Compared with traditional classrooms, flipped classrooms can increase students' interest in learning, stimulate students' interest in learning, and turn students' learning from passive to active so that learning is indeed implemented in students. Luo (2015) pointed out that flipped classroom application has generally increased students' interest in learning. Under this teaching format, students learn to retrieve information, learn independently, and think actively. Liu et al. (2017) mentioned that more than 70% of students believed that flipped classrooms could help them master the essential and challenging points of knowledge, cultivated their learning interest, enhanced their classroom participation, and cultivated their learning autonomy.

## *The Moderating Effect of Subject Type, Knowledge Type, and Class Size*

The moderating effect test results show that flipped classroom positively affect students' academic performance, but effect sizes vary by subject types, knowledge types, and class sizes.

Flipped classroom have significant differences between liberal arts, sciences, and engineering in terms of subject types. The combined effect sizes for engineering, liberal arts, and sciences were 0.34, 0.72, and 0.75, respectively. It indicating that the flipped classroom is more helps to science students.

Flipped classrooms have no significant differences in applying different types of knowledge in terms of knowledge types, but flipped classrooms are more suitable for practical courses from the perspective of effect size. Ma's (2013) research indicated that the flipped classroom is not effective in teaching systematic knowledge, but for content convenient for task-driven and project-based teaching methods (for example, word processing modules and spreadsheet modules) had more superior performance.

In terms of class size, our study showed that compared to large-scale classes and small-scale classes, medium-scale flipped classrooms had a larger effect size, with a practical value of 0.81. However, because this study's object is college students, which have specific particularity, Fu (2016) pointed out that contemporary college students' study input is at the middle or below level. Liu (2020) believed that under the influence of long-term traditional "spoon-feeding" teaching, college students have low self-learning ability and inactive learning behaviors, which have a particular impact on the application of flipped classrooms in different class sizes.

In sum, after using meta-analysis to analyze 20 experimental studies on the impact of flipped classroom teaching on students' academic performance, we can conclude:

(i) Compared with traditional classrooms, flipped classrooms have a moderately positive impact on students' academic performance (SMD = 0.66).
(ii) In terms of different subject types, flipped classroom is more suitable for science students (SMD = 0.75).
(iii) In the performance of different knowledge types, flipped classroom application in practical operation class is better than the application in theoretical class (SMD practice = 0.70; SMD theory = 0.63).
(iv) Compared with large-scale classes and small-class teaching, medium-scale flipped classrooms are more conducive to improving students' academic performance (SMD = 0.81).

The findings are obtained through data analysis based on collecting certain sample documents, which have certain reliability, but there are also shortcomings. Since meta-analysis is an exploratory analysis tool, its conclusions are inferential results rather than factorial results and are affected by moderating variables' moderating effects.

# Implications

Studies have found that flipped classrooms can effectively improve classroom teaching, and flipped classrooms positively impact students' learning attitudes and learning strategies. However, research also shows that flipped classroom have certain limitations, and flipped classroom teaching should be designed scientifically and rationally according to students' characteristics at different stages, different subjects, and different knowledge points. It can be improved from the following aspects in specific research and application.

## *Find Classroom Flipping Models Suitable for Different Subjects*

It can be seen from the learning effect of flipped classroom that it is not suitable for reasoning, conceptual and systematic courses, such as language, history, and other liberal arts courses. However, flipped classrooms have apparent advantages for abstract and logically clear science teaching such as mathematics, physics, and chemistry. The possible explanation is: liberal arts courses need to create an ideal situation to promote students' emotional exchanges and ideological collisions to cultivate their humanistic feelings. In this case, teachers can practice and study the flipping model for liberal arts courses through effective grouping, role assignment, process guidance, results in the display, exchange experience, and process evaluation methods to improve their teaching effects.

## *Appropriate Flipping According to the Characteristics of Knowledge Content*

Although flipped classroom has a moderately positive effect on improving student learning, not all knowledge in all courses is suitable for flipping. Different types of knowledge points should be different when designing flips. One should design more background knowledge of advanced organizers before class and internalize and explain the critical and challenging classroom points for theoretical knowledge. The practical knowledge can be arranged operational knowledge before the class, and the class focuses on learning more profound skills. Design targeted inquiry activities that can give full play to students' initiative and creativity to flipped classroom teaching, and knowledge types are properly integrated (Li et al., 2018).

## *Cultivate Students' Ability to Learn Independently*

Affected by traditional educational thoughts, Chinese students have been in a passive position for a long time in their studies. They do not make a study plan and have no sense of inquiry. Data surveys show that most students still rely on teacher requirements as the mainline after entering the university and cannot learn independently (Liu et al., 2017). The flipped classroom has higher requirements for students to learn independently. The flipped classroom breaks the traditional teaching model of "teacher-centered," gives full play to the students' initiative, and allows students to arrange the time and progress of learning by themselves. This requires college students to conduct self-learning management, enhance self-efficacy, enhance learning motivation, and improve self-consciousness. Teachers can provide appropriate assistance to monitor and understand students' pre-class knowledge learning to provide more targeted classroom guidance. Flipped classroom is an advanced hybrid learning model of online learning supported by modern information technology and traditional classroom. Its connotation

will continue to extend with science and technology advancement and deepening people's teaching practice.

While the flipped classroom brings advantages to students, it also places higher demands on teachers. Teachers must build a relatively complete learning support system and construct a virtual learning environment suitable for independent learning and obtain students' learning resources. In this process, in addition to the guarantee of learning resources, specific guiding methods must be used to stimulate students' inner learning motivation.

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**Appendix Table 1. Characteristics of the Included Studies.**

| ID | Author(s) | Sample Size | Subject | Subject Type | Knowledge Type | Research Design | Effect sizes |
|---|---|---|---|---|---|---|---|
| 1 | Chen, Y. (2020) | T=52 C=53 | English | Liberal Arts | Theory | Exp. | 1.01 |
| 2 | Cheng, X.F. (2019) | T=57 C=56 | English | Liberal Arts | Practice | Exp. | 1.85 |
| 3 | Qiu, H. (2014) | T=31 C=67 | English | Liberal Arts | Theory | Exp. | 0.57 |
| 4 | Gao, W.Y. (2017) | T=39 C=36 | English | Liberal Arts | Theory | Exp. | 0.93 |
| 5 | He, W.T. (2014a) | T=30 C=30 | C Language Program Design | Science | Theory | Exp. | -0.16 |
| 6 | He, W.T. (2014b) | T=30 C=30 | C Language Program Design | Engineering | Practice | Exp. | 0.48 |
| 7 | He. W.T. (2014c) | T=30 C=30 | C Language Program Design | Engineering | Practice | Exp. | 0.42 |
| 8 | He. W.T. (2014d) | T=30 C=30 | C Language Program Design | Engineering | Practice | Exp. | 0.61 |
| 9 | Li, D. (2019) | T=37 C=31 | English | Liberal Arts | Theory | Exp. | 1.67 |
| 10 | Li, X.X. (2017) | T=34 C=32 | English | Liberal Arts | Theory | Exp. | 0.99 |
| 11 | Liu, J.W. (2015) | T=55 C=52 | English | Liberal Arts | Practice | Exp. | 0.56 |
| 12 | Liu, J.J. (2016a) | T=46 C=46 | English | Liberal Arts | Theory | Exp. | 0.51 |
| 13 | Liu, J.J. (2016b) | T=46 C=46 | English | Liberal Arts | Practice | Exp. | 9.22 |
| 14 | Song, P. (2019a) | T=74 C=69 | English | Liberal Arts | Practice | Exp. | 0.95 |
| 15 | Song, P. (2019b) | T=74 C=69 | English | Liberal Arts | Theory | Exp. | 0.25 |
| 16 | Wei, T. (2019) | T=31 C=29 | English | Liberal Arts | Theory | Exp. | 0.49 |
| 17 | Xia, Z. (2015) | T=46 C=42 | English | Liberal Arts | Theory | Exp. | 0.42 |
| 18 | Xing, L. (2015) | T=87 C=95 | Physics | Science | Theory | Exp. | 5.92 |
| 19 | Xu, H.J. (2017) | T=27 C=25 | English | Liberal Arts | Theory | Exp. | 0.19 |
| 20 | Yin, H.D. (2016) | T=39 C=30 | English | Liberal Arts | Practice | Exp. | 5.50 |
| 21 | Zhong, H. (2019) | T=32 C=32 | English | Liberal Arts | Practice | Exp. | 0.46 |
| 22 | Ma, X.L. (2013a) | T=89 C=100 | Information Technology | Science | Theory | Exp. | -0.25 |
| 23 | Ma, X.L. (2013b) | T=89 C=100 | Information Technology | Engineering | Practice | Exp. | 0.28 |
| 24 | Ma, X.L. (2013c) | T=89 C=100 | Information Technology | Engineering | Practice | Exp. | 0.27 |
| 25 | Ma, X.L. (2013d) | T=89 C=100 | Information Technology | Engineering | Practice | Exp. | -0.01 |
| 26 | Thai (2017) | T=23 C=22 | Biology | Science | Theory | Exp. | 1.43 |
| 27 | Pi (2017) | T=24 C=26 | English | Liberal Arts | Theory | Exp. | -0.81 |
| 28 | AlJaser (2017) | T=34 C=18 | English | Liberal Arts | Theory | Exp. | -0.20 |

REVIEW

# Regional Cooperation Action of Poverty Alleviation by Education in China: Documentary of Pairing Assistance Action in Changxing County, Zhejiang Province

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***Abstract**: Poverty alleviation by education is the soul of reshaping the development of impoverished areas. In the implementation of poverty alleviation, the collaborative model of impoverished areas driven by developed regions is essential for China's poverty alleviation work. In 2016, Changxing County, Huzhou City, Zhejiang Province, and Zhijin County, Bijie City, Guizhou Province, established a counterpart support relationship. According to Zhijin County's education assistance needs, Changxing County has gathered its strength to implement management input, demonstration guidance, and training guidance for its weak schools. With vocational education as the starting point, Zhijin County has been "remodeled" and "implanted" education assistance and has achieved a win-win situation. This article takes the education counterpart support activities of Changxing County and Zhijin County as an example to explore the path and methods of regional education assistance in China under the vision of collaboration.*

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AMARTYA Sen (1981), the Nobel Laureate in Economics, believed that "Poverty is not only a lack of income but a deprivation of capacity. The lack of education is poverty deprived of capacity, which is deeper than income poverty, and it will lead to the intergenerational transmission of poverty." From the world's experience, education is the key to supporting the will, supporting the intelligence, blocking the intergenerational transmission of poverty, and providing academic support for solving the poor's intergenerational transmission.

Affected by various factors such as the difference in economic development between regions, government investment in education, and social organizations' development, the uneven development of education in China still exists, especially between regions and between urban and rural areas (Xu, 2014). According to the 2012 *Educational Statistics Yearbook of China*,[1] the national average elementary school teacher/student (T/S) ratio was 17.36. Six provinces and cities in the western region are below the national value, and only two provinces and cities in the east were below the national value. In the middle school stage, the average national middle school T/S ratio was 13.59, nine provinces and cities in the western region were below the national value, and only one province in the east was below the national value. Judging from the situation of the T/S ratio in the eastern and western regions (12 provinces) in 2012, the T/S ratio of the elementary school in the city was 1:19, the T/S ratio of the elementary school in the county was 1:21, and the T/S ratio of the elementary school in rural areas was 1:23. From the data, most provinces in the western region seriously lacked teachers, and there was a significant difference in the proportion of teachers in the eastern, central, and western regions (Liang & Zhang, 2014).

In the road of poverty alleviation in China, precise poverty alleviation in education is the only way to achieve poverty alleviation. However, due to China's vast territory and significant regional economic differences, the degree of poverty and the difficulty of poverty alleviation in remote and impoverished areas are still the focus and difficulty of the poverty alleviation work. Poverty alleviation in primary education in remote and poverty-stricken areas is also an obstacle that must be overcome in education precision poverty alleviation.

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In order to speed up the poverty alleviation process in the poverty-stricken areas of western China, narrow the gap between regional economy and education, and promote regional coordinated development, the Chinese government issued the "*Guiding Opinions on Further Strengthening the Cooperation of Poverty Alleviation between the East and the West*"[2] in 2016. In recent years, the eastern and western regions have pragmatically promoted the cooperation and counterpart support between the eastern and western regions and actively promoted the poverty alleviation of the poor in the western region to get rich through industrial poverty alleviation, financial assistance, and labor cooperation.

In terms of poverty alleviation by education, the developed eastern regions have continuously strengthened their collaboration and docking with impoverished counties in the western region. The development of poverty alleviation by education in China has been promoted by selecting teachers to carry out education support and disseminating ideas, organizing teams to teach training for counterpart support county teachers, and recruiting poor students to receive high-quality secondary vocational education free.

In 2016, Changxing County, Huzhou City, Zhejiang Province, and Zhijin County, Bijie City, Guizhou Province, launched an in-depth collaboration model for innovative education systems implementing educational "group-style" counterpart assistance. In 2018, under the guidance and assistance of the national, provincial, and county three-level organization departments, Changxing's counterpart assistance was coordinated through the east and west poverty alleviation. The Changxing support team and the Guizhou support team have settled in many schools in Zhijin County, and the continuous injection of high-quality educational resources has opened a new journey of education to promote poverty alleviation. This article takes the counterpart support action in Changxing County, Huzhou City, Zhejiang Province as an example to discuss the regional poverty alleviation by education strategy in China, to provide case and method support for poverty alleviation by education actions in other poverty-stricken areas.

# Status Quo of Compulsory Education Resource Allocation and Team Formation in Aided Areas

Guizhou Province is located in southwest China's hinterland, with high and dangerous terrain and rolling mountains everywhere. For a long time, occlusion and barrenness have been another pronoun of Guizhou. Poverty is broad, deep, and the task of poverty is heavy. Zhijin County is a subordinate district and county of Bijie City, a prefecture-level city under Guizhou Province's jurisdiction. It is located in the northwest of Guizhou, with Yunnan to the west and Sichuan to the north. Because it is located in the Wumeng Mountain area, it has a high altitude, low forest coverage, severe rocky desertification, complex economic development, and slow progress. The resulting "three major problems" of economic poverty, ecological deterioration, and population expansion have plagued Zhijin County for the first 30 years (Shang, 2018).

In terms of educational resources, Zhijin County's overall educational infrastructure is lacking. In some areas, it is challenging to attract outstanding teachers due to economic and transportation problems. There are insufficient total educational resources, inadequate educational resources, uneven development of compulsory education, and uncoordinated development of various education types. According to the "*Report on the Review, Evaluation, and Acceptance of the Basic Popularization of 15-year Education in Zhijin County*" published by the Education Bureau of Bijie City in 2017, there are still problems with low standards, weak foundations, and fluctuations in indicators for the basic popularization of 15-year education in Zhijin County. The development between urban and rural areas and between towns and villages is not balanced. In the compulsory education stage, the conditions for running compulsory education in towns and counties are insufficient, and the school's teaching facilities and equipment do not meet the standards during the compulsory education stage. At the high school stage, regular high schools and secondary vocational schools are seriously inadequate with degrees and insufficient teachers. The ratio of faculty to students in high schools is far from the prescribed standards, and the provision of education teachers and teaching resources cannot meet the development of students, and the conditions for running schools are not optimistic (Bijie Education Bureau, 2017).

Changxing County, Zhejiang Province is located in the junction of Jiangsu, Zhejiang, and Anhui, so it is known as the "Three Provinces Thoroughfare" and is one of the top 100 counties in China's economy (National Academy of Economic Strategy, 2020). Since 2016, Xiongjiachang Town Middle School and Central Elementary School in Zhijin County have been paired with Changxing County Gucheng Middle School and Changxing County Sixth Elementary School respectively. It has gradually developed into multi-school paired assistance in the two places in recent years, covering nine elementary schools in Xiongjiachang Town of Zhijin County and 11 elementary schools in Changxing County. The two places have carried out interactive exchanges in the form of mutual visits, sending teachers, lectures, and on-site learning on many occasions, making great efforts to enhance the soft power of education in Xiongjiachang Town, Zhijin County. In 2018, the formation of schools in Changxing County and Zhijin County received significant attention from the two places' governments, and a cooperation agreement was signed in December of that year. Since then, education assistance between the two places has risen from non-governmental exchanges to the government level, and the areas of cooperation have been continuously expanded.

# The Content of Poverty Alleviation by Education

The establishment of the direction of poverty alleviation by education needs to be rooted in the educational reality of the aided area, understand the current situation of local education, inquire about the problems in education, and provide targeted education assistance. In June 2016, the sixth elementary school in Changxing County, Huzhou City, Zhejiang Province, signed an agreement with the Xiongjiachang elementary school in Zhijin County in a theme organized by the China Tao Xingzhi Research Association on

"Improving the Soft Power of Bijie Education." Helping the pair opened the prelude of Changxing County and Zhijin County's education assistance. After signing the paired assistance agreement, relevant persons in charge of many schools in Changxing County, such as Changxing No.6 Elementary School, Changxing No.4 Elementary School Xi Community, Changxing No.1 Elementary School, and Taihu Elementary School, rushed to Zhijin County to conduct field investigations. Problems were found in the exchanges, the ideas for running the school were clarified, the relevant themes for deepening cooperation were determined, and the direction and content of the poverty alleviation by education were clarified. It mainly included teacher and management team training, precise assistance for teachers and students, and employment recommendation.

## *Insist on the Combination of Input and Output, Strengthen the Exchange of Talents in Multiple Ways*

### • Dispatch Famous Teachers to Teach

Poverty alleviation must first support the intelligence, and the support of the intelligence is in the teacher. The key to the effect of the long-term poverty alleviation by education mechanism lies in teachers. In order to change the current situation of education in Zhijin County and improve the quality of teachers, Changxing County selected 25 outstanding teachers from various stages and multiple disciplines as long-term professional and technical talents to carry out the cooperation work of poverty alleviation by education in the east and west, and organized relevant schools to carry out short-term teaching activities of famous teachers in various forms from time to time. For example, from March to April 3, 2018, 10 experts from Changxing No. 1 Elementary School, Changxing No. 6 Elementary School, and Taihu Elementary School went to Xiongjiachang Town to guide the work and sent eight lectures and six demonstration classes to teachers in the town (Chai, 2019).

Sending teachers by famous teachers is not only a demonstration of lesson examples, but more importantly, it is to walk into poverty-stricken areas and combine with actual local conditions to bring teachers advanced educational concepts and method guidance (Ding, 2018).

### • Carry Out Intensive Teacher Training

The building of a contingent of teachers is an essential way for China's education reform. According to the research of Wang et al. (2016), teachers in northwestern China have low professional literacy and self-career development planning ability, which affects the improvement of student development and the quality of teaching.

To improve teachers' overall professional quality in Zhijin County and select outstanding teachers to send them to teachers, Changxing County regularly invited experts and outstanding teachers to Zhijin for intensive training. Various training and lectures covered all teachers in the county. The content involved many aspects of subject

professional training, campus management training, teacher skill training, school-based research training, teacher subject training, semester education, training, and campus culture construction training.

- **Exchange Management Personnel to Realize Short-Term Appointments**

While inviting famous teachers to provide input for Zhijin County education, Zhijin County Education Bureau focused on shortcomings and selected frontline teaching managers and teachers to train in Changxing County. Through two-way management position exchanges, skills training between the two places, and flexible intelligence assistance, we promote the exchange of ideas, the interaction of ideas, the mutual learning of technology, and the mutual learning of styles to provide self-sustaining support for local educational development.

In the past four years, the Education Management Center of Xiongjiachang Town, Zhijin County, has sent more than 30 school administrators and key teachers to Changxing for training. The learning content mainly includes school management system construction, system construction, teacher team construction, curriculum construction, and campus culture construction (Ma, 2019). Give play to the role of educational guidance and demonstration in mutual exchanges, pass on new ideas of education, drive Zhijin teachers to practice new teaching methods, and realize the complementary of education between the east and the West.

## *Adhere to the Combination of Needs and Advantages to Improve the Effect of Precise Assistance*

- **Clarify the Direction of Running a School and Promote the Construction of School Culture**

Unclear school planning and lack of systematic design of school culture are common problems in aided schools. Therefore, clarifying the direction of running a school, building a campus culture based on the school's characteristics, showing the school's spiritual outlook, and promoting the school's connotation are important ways to help schools in the aided area develop effectively (Li, 2016).

To promote the development of football culture in the school in Xiongjiachang Town, Zhijin County, in April 2019, the vice-principal of Changxing No.6 Elementary School invited Li Jingyang, the former deputy principal of Liaoning Football School, as the football coach of the elementary school in Xiongjiachang Town Center. He gave a week-long instruction to campus football and helped Xiongjiachang School build and improve the football school-based curriculum. In July of the same year, 30 elementary school students from Xiongjiachang Town, Zhijin County signed up to participate in the football summer camp organized by Changxing County Education and Sports Bureau

after selection. Cultivate their football interest through summer camps, improve children's football skills, discover children's sports talents, and help children realize their sports dreams.

In addition to football culture, various aided schools have explored their own campus culture and formed a characteristic campus culture system. For example, Hejiazhai Elementary School founded "Jiahe Bank" and created a "small vegetable garden," turning the campus into a "home" for students. Xinglong Elementary School turns disadvantages into advantages, strengthens "love and responsibility," and narrows the distance between parents and children through a series of home-school parent-child activities. Baima Elementary School promotes the culture of reed dance, bamboo flute, and batik into the campus and has become a school with ethnic characteristics (Guo, 2019).

- **Teachers "One-On-One" Pairing, Joint Teaching and Research to Grow Together**

To accelerate young teachers' growth, a good trend of stepwise development of the teaching team is formed. The pairing activity between master and apprentice is a long-term and important school work to promote young teachers' professional growth (Zhang, 2015). In recent years, the Zhijin County Education Bureau has been closely following the core of assistance, focusing on improving teachers' quality, actively building platforms, carrying out consultation classes, new and old pairing activities, and striving to build a tower-style talent training system.

Since Zhijin County and Changxing County signed a support agreement, school teachers in the two places formed a one-on-one team. On the one hand, the selected teachers of Changxing County took the initiative to participate in the school's "new and old projects." Through mentor-apprentice pairing, precepts, and deeds, lead students to a wide range of development. On the other hand, teachers in the two places use modern educational technology for online communication and guidance. They share teaching resources, discuss and formulate assistance plans, and share gains and losses in the teaching process, which effectively promotes exchanging ideas, ideas, and teachers' styles in the two places.

- **Students Form A Team with Love and Realize the "Hand-in-Hand" Walk Together**

In addition to teachers forming "one-on-one" help groups, students from the two places also carried out "one-on-one" team activities. The schools in the two places use schools as large units and classes as small units to build a bridge between both sides' students. By helping students and students drive students, the city can help towns and villages; high-quality drives the weak, and achieves good results in expected improvement.

In the process of sending teachers and trainees to the outstanding teachers in Changxing County, they went to the grassroots and rural schools, carried out assistance

research, and used funds, in-kind and spiritual encouragement. One-on-one paired assistance was provided to 18 needy students from Xinmai elementary school in Xiongjiachang Town, Zhijin County. Besides, a "one-to-one" assistance group has also been established between the students of both schools. The school cares for each other through letters and telephones in life, thought, and spirit, exchanges ideas, studies, and life difficulties, and promotes students' expected growth in the two places. This kind of student team formation based on school team formation and teacher team formation can enable students from both sides to make progress together in mutual learning and achieve the result of all-round assistance (Guizhou Provincial Statistics Bureau Synchronous Well-off Village Task Force, 2017).

- **Material Support**

While providing the "soft power" assistance to Zhijin County's high-quality education teachers, Changxing County also continuously assists the "material foundation" of Zhijin County's educational undertakings. In the past four years, schools in Changxing County and Zhijin County have initiated material donations. Changxing No.6 Primary School has donated more than 700 sets of school uniforms, more than 2,000 books, and electronic pianos and assembled toys worth more than 60,000 CNY. Changxing No.4 Elementary School donated 2,000 sets of school uniforms. Changxing No. 1 Elementary School assisted in constructing flush toilets at Muwang Elementary School in Xiongjiachang Town. Changxing Experimental School donated two laptops to Xiongjiachang Village Elementary School. The total amount of assistance funds reached 650,000 CNY, which has effectively improved the local conditions for running schools.

## *Combining Assistance and Self-Reliance to Enhance the Endogenous Motivation of Education in Zhijin County*

Industrial poverty alleviation is a crucial link in activating hematopoietic function in impoverished areas. In order to fundamentally solve the problem of deep poverty and block the intergenerational transmission of poverty, it is necessary to realize the transformation from external "input type" assistance to its own "output type," thereby activating the endogenous driving force of development (Jiang & Tan, 2017).

After learning that Zhijin County's high school enrollment rate was low and many students had to enter the society early to earn a living, the Changxing County government attached great importance to it and began to explore the school-enterprise cooperation, secondary vocational cooperation, and sports cooperation modes between the two counties. In December 2018, an agreement was reached on the targeted enrollment of labor service cooperation bases outside the county, forming an overall assistance work for enrollment, training, and work in the eastern and western regions. The

"Targeted Employment Yunnan-Guizhou Class" is the beginning of the cooperation between Changxing County and Zhijin County of Guizhou Province and Shaotong County of Yunnan Province in vocational education.

The "Yunnan-Guizhou Class" training subjects are schools and enterprises, and the training places are classrooms and workshops. The schools and enterprises jointly formulate the training content. Each student who enters the "Yunnan-Guizhou Class" can receive 5,000 CNY education funds and 5,000 CNY living allowance every year. Every winter, the student's intended Employment Company is responsible for solving the round-trip fare of 1,500 CNY. After the three-year study period's expiration, priority is given to recommending employment in the intended enterprise.

In July 2019, the first "Targeted Employment Yunnan-Guizhou Class" was successfully opened. A total of 146 students from Guizhou Zhijin and Yunnan Zhaotong came to enroll. These students all study in Changxing County Vocational Education Center and Changxing County Technician College. They implement a teaching model that combines learning and skills so that students can get the transfer of theoretical knowledge and take into account the practical skills of operation training. In the first "Yunnan-Guizhou Class" training course, there were four majors in mechanical processing, assembly fitter, electrical operation and control, and tourism service and management.

In July 2020, based on the "Yunnan-Guizhou Class," the "Changxing Class" was officially launched. Different from the former, the latter was funded by the Changxing government, allowing students in the Yunnan-Guizhou area to go to local vocational colleges for free, and intern in the signed orientation enterprise in the last year, and finally stay in the enterprise to work after graduation (Guo, 2020).

The establishment of "Yungui Class" and "Changxing Class" is a cross-regional cooperation between coastal cities in China's east and mountainous counties in the west. It combines the east and west regions' resources, with people coming out of the west and platforms coming out of the east. It is also a pioneering work in school-enterprise cooperation and talent training under the new situation. This is a way that is led by the human resources and social departments, coordinated by the education department, vocational education institutions commission training, various forming enterprises undertake, entrust training on-demand, and order to undertake vocational education talents. It can effectively expand vocational education talents' upward space and promote the "joint" of the east and the west to create a "output bank" of skilled talents.

# Regional Education Assistance Effectiveness

Since 2016, starting with the pairing between the sixth elementary school in Changxing County, Zhejiang Province, and the elementary school in Xiongjiachang Town, many schools in Changxing County, have signed pairing assistance agreements with schools in Xiongjiachang Town. After the pairing with Changxing County, the schools in Zhijin County represented by the elementary school in the central elementary school of Xiongjiachang Town further clarified the school's school-running ideas and formulated

development plans that were in line with the school's actual conditions. Then the school's campus culture theme was established, the school moved towards connotation development, and the soft power of education was greatly improved.

## *The Soft Power of School Education in Aided Areas Has Been Greatly Improved*

- **School Education and Teaching Results are Fruitful**

Xiongjiachang Central Elementary School, as one of the aided schools, has created a systematic "Xingzhi" campus culture under the assistance of the past four years. The school has been rated as a safe and civilized campus, five good working committees, municipal outstanding young pioneer's squadron, moral education model school, quality education model school.

After Hejiazhai Elementary School paired up with Changxing Shuikou Elementary School, the two schools sent teachers to each other to study in pairs. After Shuikou Elementary School's teachers came to Hejiazhai Elementary School, they gave good suggestions on on-campus culture construction, student reading and learning, and student conduct evaluation and motivation. Hejiazhai Elementary School has formed a relatively systematic campus "family culture." The entire campus culture construction follows the principle of building a "home" campus, turning the campus into a student's "home," and creating a colorful campus culture.

- **The Professionalism of Teachers has been Greatly Improved**

Since the two places became a support group in 2016, Changxing joined hands with Zhijin to improve teachers' teaching level in Xingyi City using teacher exchanges and support teaching on-the-job learning organizational training and network resource sharing. In 2018, two teachers, Min Zeng and Ju Gao from the elementary school in Xiongjiachang Town Center won the second prize in the county quality class competition. Two teachers, Min Zeng and Yumei Wang won the first prize in the National Imagination Composition Teaching Competition organized by the Tao Xingzhi Society of China.

- **Student Development is More Comprehensive**

In addition to the transfer of academic knowledge, they pay more attention to students' overall development. Students in Zhijin County actively participate in various art and sports competitions and have won many awards. In 2016, the elementary school of Xiongjiachang Center won the fourth place in badminton group and sixth place in football (female); the second prize of Go group, the outstanding prize of chess group, the first prize of the chorus, the third prize of group dance, and the third prize of national

musical instrument. In 2017, the school won the seventh prize in football (male), the third prize in Go, the excellence prize in chess, the outstanding reading prize, the first prize in cross-talk, the first prize in a group dance, the second prize in the chorus, and the third prize in total points for table tennis. The second place in the women's team, the third place in the men's team, the first place in total badminton points, the first in women's team, the first in women's doubles, the first in men's singles, and the first in women's singles (a total of 7 championships, the elementary school in Xiongjiachang Town won 5 of them). In 2018, he won sixth place in football (male), third place in Go, and the first national musical instrument prize.

## *Brings Greater Social Benefits to the East and West Regions*

The development of cooperative poverty alleviation by education between the east and the west has promoted the soft power of education in the aided areas and helped the east, and the west has produced more excellent social benefits. Through the "Yunnan-Guizhou Class," "Changxing Class," and other channels, to meet the economic development needs of the eastern region, adopt the method of "internship + employment" to provide human resources for enterprises in the eastern region. It solves enterprises' employment needs in Changxing County and solves students' employment problems in Zhijin County. This will help impoverished areas in the western region train more skilled talents and lay a solid foundation for students' employment.

The collaborative development of Zhijin County and Changxing County has also attracted more social attention.

On the morning of October 23, 2018, Zhijin County's all-around environmental improvement project and the balanced development of compulsory education observation group came to elementary school in Xiongjiachang Town's on-site promotion meeting. This is the first time a rural school in a mountainous area has welcomed such a large-scale job searching meeting.

On April 10, 2019, the Ministry of Education-UNICEF School Environmental Improvement Project Observation Group visited Xiongjiachang elementary school. More than 100 members of the observation group included: Lijing Liu, Director of the Department of Sports, Health and Arts, Ministry of Education, Zhenbo Yang, Project Expert of UNICEF China Office, Stewart Nyamuranga, Project Officer of UNICEF China Office, Zhiming Hao, Guizhou Provincial Department of Education Sports and Health Sen Ye, Section Chief of Art Department, Project Leader of Sports, Health and Art Department of Education Department (Education Committee) of Yunnan Province, Guangxi Zhuang Autonomous Region, Chongqing City, Xinjiang Uygur Autonomous Region, director of 32 townships and sub-district management centers in the county, principal of the elementary school in the county (Guizhou Provincial Statistics Bureau Synchronized Well-off Village Work Team, 2019).

# Perspectives

Since the implementation of the East-West Cooperation Plan in 2016, the eastern region, represented by Zhejiang, Jiangsu, and Shanghai has established a close education counterpart support relationship with the weaker regions of the western region under the promotion of relevant government departments. As a result, a group of east-west paired assistance groups, represented by Changxing County and Zhijin County, emerged. The support groups in the formation have frequent exchanges and interactions, and the support area communicates and assists the recipient area in terms of teaching, teacher training, and high-quality teaching resources.

Changxing County and Zhijin County's educational cooperation poverty alleviation model has established a long-term new output poverty alleviation mechanism by education. It has found a new way for the government to achieve precise poverty alleviation, provides a talent guarantee for the long-term development of enterprises, and realizes the ultimate goal of educating people for the school. A four-win situation for the government, schools, enterprises, and students has been initially realized. This educational poverty alleviation model has wholly changed low-income families' destinies and blocked poverty's intergenerational transmission.

Starting from the assistance cases of Changxing County and Zhijin County, we can see that the collaborative practice of poverty alleviation between the east and the west of China has achieved more significant results and has had an essential impact on the cause of poverty reduction in the world. However, with the in-depth advancement of poverty alleviation by education work, the difficulties and problems faced by it cannot be ignored.

***First, how to help the aided areas build their high-quality educational resources?***

At present, most of the education in poverty-stricken areas in China has poor school conditions, weak teaching staff, and difficulty in achieving student development. After implementing China's vigorous poverty alleviation, through funding and policy tilt, targeted enhancement of education quality in impoverished areas in the west has been strengthened. However, is the introduction of educational resources in developed areas suitable for students in the aid areas, and how to adapt high-quality educational resources to students' individual needs in the aid areas? This is not only a short-term resource-sharing behavior that can be achieved, but more is to help impoverished areas establish a local team of high-quality professional teachers. This affects the standardization of schools in impoverished areas and the improvement of teaching quality.

***Second, how to establish a long-term effective alleviation mechanism for education cooperation between the East and the West of China?***

The achievements of poverty alleviation by education are cumulative, and it takes at least one or two generations of accumulation to see the improvement of education on individuals and families. Therefore, the implementation process is challenging to be accurately monitored, and a reasonable evaluation system is lacking, which affects the

implementation of policies, feedback, and subsequent evaluation and improvement of the project. The same applies to the Poverty Alleviation of the East-West Educational Cooperation. Both parties of assistance must establish accurate and long-term effectiveness alleviation by education evaluation and supervision systems to help a part of the challenging groups. This kind of help is a material donation and a reasonable layout from the perspective of the cost and benefit of the educated. Fundamentally stimulate the endogenous learning motivation of educating low-income families and turn them into a vital force to feedback the hometown (Wang et al., 2019).

***Third, how to help the recipient areas absorb local graduates?***

Due to the constraints of natural and economic conditions and historical reasons, poor areas have slow economic development, making it difficult for talents to gather, which seriously affects economic development. To attract talents, government departments and employers at all levels in poverty-stricken areas have increased their efforts to recruit talents at all costs, but the results are still not noticeable. On the one hand, there is a shortage of talents, and on the other hand, the talents that have been painstakingly introduced are of little use, causing a waste of talents. Therefore, helping the aided areas train a group of local talents suitable for local development is an effective way to alleviate the aided areas' economic development constraints. In this regard, the assisted areas should vigorously create an excellent environment suitable for the growth of talents, actively encourage local entrepreneurs and technical personnel to return to their hometowns through preferential policies, and actively build a financial service platform to help entrepreneurs who return to start their businesses solve their problems. Ultimately help them to make the company more substantial and more prominent. Simultaneously, the aided areas should also focus on cultivating local talents and increasing local talents training. Expand their horizons through education and improve their comprehensive business management capabilities and other aspects (Shen, 2020).

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REPORT

# Poverty Alleviation by Education is A Kind of Awakening and Discovery: In Memory of the "Poverty Alleviation War" of a Retired Middle School Principal in Eastern China

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***Abstract**: The development of education to improve poverty in the region has become an essential direction of the world's poverty alleviation work. In the poverty alleviation by education work in China, educators who are on the front line of poverty are determined by education and nurturing their wisdom, leading countless children from families out of poverty and toward hope. In 2016, Liqun Chen, the principal who retired from a prestigious high school in eastern China loving the Miao Townships, insisted on combining poverty alleviation with supporting aspirations, using the love and responsibility of a "teacher" to inject new spirit into basic education in ethnic areas. He ignited dreams and hopes for children in frontier regions. This article elaborates on Liqun Chen's help and aspirations in Taijiang County from the perspectives of students, teachers, and regions.*

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***Keywords**: Poverty Alleviation by Education, Liqun Chen, High School Principal, Voluntary Education Assistance*

# Introduction

IN targeted poverty alleviation, aspirations are the cornerstone, academic support is the path, and poverty alleviation has a sustainable endogenous motivation for poverty alleviation (Wang, 2019). Studies have shown that mobilizing the internal poverty alleviation motivation of the target can accelerate the speed of poverty alleviation and effectively prevent the risk of returning to poverty (Tuo, 2003). The same is valid for education assistance. Education is not only to teach students the skills of learning and work but, more importantly, to eliminate the spiritual poverty of students. And then guide students, teachers, and the general populations in poverty-stricken areas to correctly understand the relationship between education and poverty alleviation, and attach importance to self-education and family education.

Taijiang County is located in the eastern part of the Yunnan-Guizhou Plateau. Known as "the first Miao County in the world," it is a national-level poverty-stricken county. The G60 highway and 320 expresses pass through the county, and no train is there to this day. There is currently no traffic light in the city, and 98% of the population is the Miao minority (Taijiang County Government, 2017). As the only public high school in the county, Taijiang Nationality Middle School has more than 1,200 poor households among more than 3,000 students.

In the fight against poverty, Taijiang County has become a key county for national assistance, and it has developed counterpart assistance cooperation with Hangzhou City. In August 2016, Liqun Chen retired from Hangzhou Xuejun High School, a key national high school, as the principal. Under the coordination and invitation of the support team, he declined high-paying invitations from many school-running institutions and went to remote mountainous areas in southeastern Guizhou to support education freely. He became the principal of the only private high school in Taijiang County, Guizhou Province, namely Taijiang National Middle School in Guizhou Province. After entering the school, Liqun Chen extended the original teaching time, repeatedly using actions to practice the persistent belief of "training children in poverty-stricken areas

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well to cut off the intergenerational transmission of poverty." His efforts led the quality of Taijiang National Middle School education to become the first in the prefecture. They helped more than 2,200 poor Miao children in Taijiang County get out of the mountains, thus wholly changing their lives.

Liqun Chen's deeds of voluntary education assistance have been widely praised. Liqun Chen has been awarded the first China Education Reform and Innovation Outstanding Principal Award, Zhejiang Chuncan Award, the first Hangzhou Top Ten Teachers Touching Hangzhou, Zhejiang Education Top Ten Annual News Figures in 2017, and Guizhou Provincial Advanced Individual in Poverty Alleviation. In 2019, he was awarded the title of "Model of the Times" by the Central Propaganda Department. He believes that he is "a model of teaching and educating people in the practice of giving priority to the development of education and building a strong education country, and an outstanding representative of the "four haves" teachers in the new era." (Xinhua News Agency, 2019).

# Poverty Alleviation First Supports the Aspiration and Helps the Students to Establish Their Aspirations

"The most important thing for educators is to transform strict external requirements into powerful motivation for students to spontaneously and internally drive. Without this, it will not be an education." This is what Liqun Chen wrote in the book "*My Educational Propositions*" (Chen, 2015). As an educator with the aura of "all Chinese principals," Liqun Chen has dedicated himself to his teaching career for more than 30 years. He insisted on integrating grand aspiration education into teaching, creating a solid aspirational education atmosphere, guiding students to establish lofty aspirations, and laying a solid foundation for students to grow into talents.

## *Change the Idea of "Education is Useless"*

In China, where compulsory education continues to be popularized, the argument that "education is useless" has gradually disappeared. However, with the continuous advancement of the urban process, a large number of rural laborers flock to the cities. Compared with the temporarily unprofitable educational investment, more parents or students choose to give up education and go out to work to help their families escape poverty. Under this circumstance, a new argument of "reading is useless" has emerged, and more and more rural children and parents believe that they can make money even if they go out to work without studying (Qin & Wang, 2020). This idea is also deeply ingrained in the hearts of the students of Taijiang National Middle School.

After a monthly exam, Liqun Chen received an anonymous letter from the student stating that at least 500 students cheated by their mobile phones during the 12th-grader monthly exam. The student said that some students go to high school to get a diploma and find a wife. "There are too many students who don't want to learn." The student at the end of the letter wrote: "My outlook on life and values is to start a busi-

ness and start a company of my own, with a net worth of tens of billions, drive a luxury car, live in a villa, be keen on public welfare, and pass on the love. Education is just a piece of paper. I won't go to school next semester. I want to go out to earn money."

Faced with such a situation, Liqun Chen gradually realized that learning is far less important than starting a family in a village where there has not been a college student for more than ten years. So, he thought of many ways. In the big playground, he read to everyone the heart-wrenching anonymous letter that 500 students cheated by their mobile phones in the exam. He warned everyone that if they did not study, they would be like their parents and become "the backup of migrant workers." Only by learning can the next generation get rid of this vicious circle and complete the leap from "illiterate and semi-illiterate family" to "knowledge family" (Yin, 2020).

## *Strict Management and Cultivate Good Study Habits*

Learning habit is a unique behavioral way of learning formed through repeated practice in the student's time. Good study habits can improve learning efficiency and reduce learning resistance. Bad learning habits are harmful or affect personal learning (Rabia et al., 2017).

Liqun Chen decided to start with learning habits. He first created the "Quiet Learning Month" throughout the school. At the school-wide conference, I will teach teachers and students the principle of "being calm when there is a big event." A homeroom teacher meeting was held, and it was proposed that discussions in the classroom during evening self-study were not allowed. Every class must be checked and evaluated every day. He went to the teaching building to inspect the classrooms every morning, noon, and night.

In the second month, Liqun Chen announced that the whole school had entered the "Autonomous Learning Month." He asked the students to record the previous month's exam results, set a goal for the next month's exam, and sprint to make breakthroughs. The school-wide statistical appraisal was conducted on the total achievement scores of each class.

Considering the labor output of rural families in Taijiang County that led to a large number of left-behind children and disorderly spared time, Liqun Chen decided to implement closed boarding management at school. That is, every week, except Saturday night, there is no evening self-study, and other times 6:30-10:20 evening self-study. All students wear school uniforms at school. Students hand in their mobile phones to the school for safekeeping and return them when they go home on weekends.

His ensuing thunder tactics hit the school directly. A few months later, the style of the school has changed. "More than 3,000 people and over 50 classrooms in the school had become quiet and orderly within only two months" (Li et al., 2019).

## *Rooted in Miao's Culture to Establish "Ambition" Forest*

The tree is the totem of the Miao nationality. Compatriots of the Miao nationality have the custom of "a tree for life and death": plant a tree when they are born, and cut down the tree when they die, and use it as their own coffin. Liqun Chen started from the life relationship between the Miao people and the trees, enriching the new connotation of "ambition."

Since Liqun Chen became the principal of Taijiang National Middle School, teachers and students have had one more festival: "12.9 Inspirational Festival". On this day of each year, the 12th-grade teachers and students have to plant an "ambition tree" on campus based on the class. There is also a bottle buried under the tree; inside it is the college entrance examination aspirations and life ideals of the whole course of teachers and students. Not far from the gate of Taijiang National Middle School, you can see the "Ambition Forest" planted by the teachers and students of the school. Although they are still seedlings, they are already lush.

Through class meetings, adult ceremonies, flag-raising speeches, recitation competitions, study tours, club activities, and reading activities, Liqun Chen strengthened and stimulated the understanding and thinking of "ambition" among teachers and students. It is hoped that the teachers and students of the Miao nationality can cultivate "lofty ambition, high aspiration, and elegant inclination" to become the spiritual arm that leads and accompanies life. (Pang & Lee, 2019)

# Practice Education and Awaken Teachers' Educational Potential

Poverty alleviation is a job aimed at people. On the one hand, it is necessary to put people first, implement policies according to households, and "target therapies." On the other hand, we must rely on a solid poverty alleviation work team to make the poverty alleviation work detailed and practical. The successful implementation of poverty alleviation by education is also inseparable from the hard work of a group of teachers who have been committed to education in impoverished areas for many years. As Liqun Chen once mentioned in a report, "All assistance is always temporary, and all educational assistance always ends. The key is to enhance the output function of the sustainable development of education in poverty-stricken areas. The most important thing for schools is Teachers must awaken their sense of responsibility and stimulate their educational potential." (Zhu, 2019).

## *Rectify the Teaching Style and Improve the Overall Quality of Teaching*

The teaching style is the attitude and morality of teachers in teaching and educating people. Teachers must not only create and disseminate knowledge but also use their good moral qualities to influence students to guide and nurture students in scientific knowledge, thoughts, emotions, and behavioral methods (Yang & Gong, 2004).

When he first arrived at Taijiang National Middle School, Liqun Chen was shocked by the school's chaotic teaching order: it has become common for some teachers to arrive late and leave early. Some teachers stood in the hallway and chatted during class. Some teachers went to eat breakfast after clocking in for early reading class. Some proctors slipped to the office halfway through. In this learning atmosphere, students slept in class and wandered in groups in the town after school. It was common to smoke, puppy love, and play games. After that, Liqun Chen organized all teachers in the school to let teachers themselves take part in a monthly exam prepared for 12th-grade students. The teacher dealt with it perfunctorily, whispering to each other and copying other teachers' answer sheets. This time, Liqun Chen was invigilated by Liqun Chen himself, but some teachers failed the exam.

Therefore, Liqun Chen surveyed the situation of teachers in the whole school, and the results were surprising. As the only public high school in the county, Taijiang Nationality Middle School had 178 full-time teachers; 59 were from junior high schools in various towns in the county. Therefore, the low level of teachers' overall professionalism is evident.

To establish a good teaching atmosphere and improve the quality of the teaching staff as soon as possible, more than a dozen systems and regulations were issued within two months. The whole school began closed management, with early reading and late self-study in each classroom for checking and appraisal and strict control of teachers' attendance. Liqun Chen successfully invited 68 teachers from Hangzhou to support teaching in Taijiang to carry out teacher training projects. Each grade and teaching group started to listen to and evaluate each other. At the same time, they took advantage of the resources of Kaili No.1 High School of Guizhou Province, a famous school in Southwestern Guizhou, and invited their teachers in to "same class but different structure" with teachers from Taijiang National Middle School. That is to say, for the same course, the teachers of the two schools can each give a lecture and then listen to and evaluate each other. Every Saturday afternoon, Kaili No.1 High School of Guizhou Province sent nine young teachers to the school to give lectures. Lecture subjects covered nine school subjects. Each topic also sent a teacher specializing in listening and commenting—one grade a week, from the junior students to the senior students. Liqun Chen also promoted the establishment of a "going out" training system. Within three years, eight batches of 134 teachers went to key middle schools in Hangzhou to accept on-job training (Huang & Wang, 2019).

## *Strengthen the Training of Famous Teachers and Cultivate a Team of Teachers in Taijiang County Who are "Not to Take Away"*

"Cultivating a team of backbone teachers that can't be taken away is the key to the school's sustainable development." Under the promotion of Liqun Chen, Taijiang Nationality Middle School launched the "Young Teacher Training Action Plan." For

young teachers who have been working for less than three years, key teachers who have been working for 3 to 8 years, and senior teachers who have been working for more than eight years, different training goals have been set up.

Because of the low salary, several teachers leave the school every year. To solve teacher treatment and let teachers in Taijiang County work at ease, Liqun Chen traveled to the county to obtain resources for teachers. In April 2018, the Hangzhou Municipal Government helped Taijiang 10 million yuan, and the county allocated 3.2 million yuan to Taijiang National Middle School. Liqun Chen used it to reward teachers. He also took out the special government allowance of the State Council and the Hangzhou Outstanding Talent Award of more than 200,000 CNY and set up a "teaching scholarship" to award nine teachers each year with 5,000 CNY each.

Besides, Liqun Chen took the initiative to take over many "extra things." He began to train principals and teachers throughout the county, the entire prefecture, and even the province and gave compulsory lessons to some schools in Taijiang County or Southwest Guizhou. He served as the instructor of the famous principal's studio of Fangzhao Town Elementary School. Voluntarily give reports and give more than 60 lectures, and more than 10,000 principals and teachers have been trained.

Liqun Chen's spirit of "establishing education and cultivating people with morality" touched everyone. More and more teachers choose to stay in Taijiang County to continue teaching. At the same time, it also attracts groups of young and outstanding teachers to come to support teaching and make silent contributions to Taijiang in the deep mountains. Not only that, but many students admitted to the university also said that after returning from school, they must contribute their own strength to their hometown and use practical actions to encourage more students in poor areas to study hard (Li, 2020).

## Levering Low-Level Thoughts, Restarting Respect for Teachers and Education

"Education is firstly the growth of the spirit, and secondly it becomes part of the scientific acquisition." (Jaspers, 1999). Regardless of students, teachers, and parents, Liqun Chen attaches great importance to the power of "spiritual awakening" and "spiritual education."

Before Liqun Chen arrived, Taijiang County, a village with more than 2,200, did not get its first college student until 2014. Some village children set out to school before dawn. One was that they were far away, and the other was that they would be brought back once neighbors found them. Because the villagers generally believed that "our children do not read, their children go to school, and they will bully us when they come back." Some parents went to school on weekends to give their children daily necessities and brought homemade tobacco. In the eyes of parents, "to smoke and drink is a sign of man." For learning, locals seemed to have no hope of this school. The school organized a parent-teacher meeting, and very few parents were present. There were more teachers than parents at the meeting. During the college entrance examination,

few parents waited in twos and threes at the school gate, and it seemed that few people paid attention to the college entrance examination.

Education is a permanent solution to stop the intergenerational transmission of poverty. How to restore and create a good folk tradition of respecting teachers, cultivating and studying in underdeveloped areas has been a question that Liqun Chen has been thinking about since entering Taijiang County.

Therefore, Liqun Chen started from the masses, publicized the meaning of education, awakened the motivation of the groups to change the status quo, moved the bottom of society, and removed the "big mountains" that lie in people's hearts.

On the one hand, Liqun Chen proposed to rebuild Wenchang Palace and Lotus Academy. Wenchang Palace and Lotus Academy are located on the east hillside of the county seat and were built during the Guangxu dynasty. At that time, Qingzhi Zhou, who was also known as the Tongzhi[1] of Taigong Hall[2], was the advocator of these two buildings; under his persuasion, the children of the Miao family began to study, and the trend of respecting teachers and teachings became more and more popular. Today, the courtyard is empty, and the academy is withered. Due to disrepair, the roof of the Wenchang Palace is tilted 1.5 meters southward. Under Liqun Chen's initiative, the county government has organized to renovate Wenchang Palace and Lotus Academy. Liqun Chen bought a statue of Confucius at his own expense, more than 80,000 CNY, and placed it in the academy. He suggested that the county set up a Taijiang library outside the academy to form a good atmosphere of reading and re-education.

On the other hand, Liqun Chen organized school teachers into the village to preach so that the people fully realized the significance of education for changing poverty. Under the coordination of the local government, Liqun Chen personally trained cadres in the village. The content includes education and poverty alleviation, respect for teachers and education, and family education. He said that only by "moving up the lowest level of society" and forming a tradition of respecting teachers and teaching people in Taijiang leap the true sense.

With the strong support of the county government, every year after the college entrance examination results came out; Liqun Chen organized school teachers to come to the village to congratulate them. He took the teacher to the home of the students who had passed the exam to deliver the happy news, set off firecrackers, and posted the admission list on the most conspicuous wall of the stockade. He wanted to let the whole village see it and "fire up the education atmosphere." Vigorously promote the typical deeds of "getting a child out of poverty, lifting a family out of poverty, and driving a stockade forward" to inspire villagers to attach importance to education.

Besides, parents who emphasize education will be rewarded. More villages have held commendation meetings in the past two years, and the bonuses are getting higher (Huang & Wang, 2019).

# All Forces Gather to Help Students Realize Their College Dreams

Southeast Guizhou is the main battlefield for the nation's poverty alleviation. Taijiang County has been a state-level poor county until 2019. In 2016, the annual fiscal revenue of Taijiang County was 270 million CNY, but the budgetary expenditure was 1.5 billion CNY, mainly relying on central fiscal transfer payments (time, 2019). As the only public high school in the county, Taijiang Nationality Middle School has deplorable school conditions.

For all students to study at school with peace of mind, teachers teach at school with peace of mind. Thanks to Liqun Chen's efforts, more and more locals attach importance to education, and more and more foreigners pay attention to education in Taijiang. Under various assistance policies, the phenomenon of dropping out of school due to family difficulties has been eliminated, and the school infrastructure conditions have also been improved. The number of student canteens increased from one to three, and a separate teaching staff canteen was opened. Strengthen logistics management, invest a certain amount of money, improve the quality of food, and strictly manage sanitation. The construction of the student dormitory, which had been delayed again and again, was quickly completed, and each dormitory had its bathroom. Some companies took the initiative to contact Liqun Chen to donate money to students to solve college tuition for needy students in Taijiang Nationality Middle School.

Since he came to Taijiang County in 2016 to support teaching, Liqun Chen's teaching time has been postponed again and again, from one year to four years. At the same time, Taijiang Nationality Middle School's undergraduate admission rate for the college entrance examination rushed from the end of the state to the first in the state. Among the 1,047 candidates for the college entrance examination in 2020, 829 have reached the undergraduate level, of which 270 have gone to the first level, and the undergraduate online rate reached 79.2%. Only four years ago, Taijiang Nationality Middle School's undergraduate entrance examination rate was only 10%. More than 2,200 students from the school have been admitted to undergraduates in the past four years and have stepped out of the barren mountain (Yin, 2020).

In August 2020, Liqun Chen stepped down as the principal of Taijiang National Middle School. Before he left, the people of Taijiang gave him a new identity-the lifelong honorary principal of Taijiang Nationality Middle School. Today, 63-year-old Liqun Chen is still traveling back and forth between Hangzhou and Taijiang. He said that he would frequently travel between Hangzhou and Guizhou to voluntarily give lectures to principals here for a long time in the future.

During Liqun Chen's teaching support process, he always regards cultivating good habits and cultivating the spirit of struggle as an essential starting point and goal of poverty alleviation by education (Ju et al., 2020). For poverty-stricken areas represented by Taijiang County set up good educational ambitions, create an intense atmosphere of ideals and virtues, and awaken the hearts of the low-level people to settle for poverty. This may be more important than the simple input of material, human and educational resources.

***Notes***

1. *Tongzhi, the official name of the Ming and Qing Dynasties, was the deputy of the prefect.*
2. *Taigong Hall is today's Taijiang County, Guizhou. In the eleventh year of Emperor Yongzheng in the Qing Dynasty (1733), the Taigong Hall was established, and it was renamed Taigong County in 1913 and Taijiang County in 1942.*

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