*Article*

GIFTED EDUCATION INTERNATIONAL

Gifted Education International
2015, Vol. 31(3) 257–270

DOI: 10.1177/0261429414526335
gei.sagepub.com
SAGE

# A cross-cultural perspective about the implementation and adaptation process of the schoolwide enrichment model: The importance of talent development in a global world

**Daniel Hernández-Torrano**
Nazarbayev University, Kazakhstan

**Adile Gulsah Saranli**
TED University, Turkey

## Abstract

Gifted education and talent development are considered today as key elements for developing human capital and increasing competitiveness within education and the economy. Within this framework, a growing number of countries have begun to invest large amounts of resources to discover and nurture their most able students. As boundaries and differences between cultures become less pronounced in a global world, educational models to guide gifted education and talent development are also becoming more widely applicable. In this context, the Schoolwide Enrichment Model (SEM) stands as a flexible model that enables schools in different regions of the world to provide individuals with opportunities to identify their potentials and to help them reach their highest levels of competence. This paper provides an overview of the SEM and the broad range of regions in which the model is currently

**Corresponding author:**
Daniel Hernández-Torrano, Nazarbayev University Graduate School of Education, 53 Kabanbay Batyr, Astana 010000, Kazakhstan.
Email: daniel.torrano@nu.edu.kz; d.hernandeztorrano@gmail.com

implemented, as well as an examination of the reasons for its widespread acceptance among educators around the world. In addition, this paper includes an interview with Dr Joseph Renzulli, inventor of SEM, in which several issues related to the cultural adaptation of the SEM are discussed. Finally, the paper presents an introduction to the SEM International Network, a newly developed project created to connect SEM users around the world and to facilitate the sharing and accessing of ideas and resources for talent development.

**Keywords**
Gifted education, talent development, cultural adaptation, schoolwide enrichment model

There is general agreement on the importance of talent development to increase human capital and the competitiveness of education and economies around the world. The motivation behind talent development is based on two goals. The first goal is to provide individuals with opportunities to identify their potentials and to help them reach their highest levels of competence. The second goal is to discover and nurture people within a society who can help solve their contemporary problems, lead change in all areas of human knowledge (e.g. science, politics, economics, business, religion, art), and contribute to the general wealth and prosperity of their nations.

Every human has the right to a systematic process of talent development. The idea that all members have an important role in the development of a society forms the basis for a schoolwide attitude towards talent development. It should also be noted that roles possessed by every individual in society are not static and can always be strengthened and developed (Renzulli and Reis, 1997). However, this can only be made possible by educational systems, schools and teachers that place the idea of talent development at the core of educational programs. As such, educators need a roadmap to be able to uncover this valuable potential for achieving productivity in their students.

As boundaries and differences between cultures become less pronounced in a global world, educational models proposed to guide such talent development are also becoming more widely applicable. In this context, the Schoolwide Enrichment Model (SEM; Renzulli and Reis, 1997, 2013) stands as a flexible model that enables schools in different regions of the world to focus on talent development and has the potential to provide the guidance necessary to transform any school into a center for talent development. This paper provides an overview of the SEM and the broad range of regions in which the model is currently implemented, as well as an examination of the reasons for its widespread acceptance among educators around the world. In addition, this paper includes an interview with Dr Joseph Renzulli, inventor of SEM, in which several issues related to the cultural adaptation of the SEM are discussed. Finally, the paper presents an introduction to the SEM International Network, a newly developed project created to connect SEM users around the world and to facilitate the sharing and accessing of ideas and resources for talent development.

## The schoolwide enrichment model: A brief description

The SEM is an organizational plan for talent development that aims to develop creative productivity by exposing students to a variety of challenging learning experiences based on their abilities, interests, learning styles, and preferred modes of expression. The SEM integrates a systematic set of specific strategies, such as the total talent portfolio, enrichment clusters, and curriculum compacting, to provide each student with different opportunities and resources to achieve and maximize his or her potential (Renzulli and Reis, 1997, 2013). The SEM is grounded in the Three-Ring Conception of Giftedness, a conceptual framework that recognizes giftedness as an interaction between and among three clusters of traits or attributes (above average intelligence, creativity, and task commitment) that promote creative productivity (Renzulli, 1978, 1986, 2005). At the core of this approach is the Enrichment Triad Model, a pedagogical model for developing creative productivity by exposing students to various topics, fields, and areas of interest through general exploratory activities, group training activities, and individual and small group investigations of real problems (Renzulli, 1978; Renzulli and Reis, 1997). Recently, these two contributions have been complemented with a new theory that explains the role of the "intelligences outside the normal curve" or the co-cognitive components in the creation of social capital and leadership among young people with exceptionally high potential; thereby enhancing their ability to impact positive change and innovation in the world (Renzulli, 2012; Renzulli and D'Souza, 2012).

There have been a number of research studies investigating the effects of this model on the education of both gifted and non-gifted children. These studies have shown that the SEM, and methods derived from this model, improve student creativity and productivity (Delcourt, 1993) with effects that last in the long term (Hébert, 1993) and that the identification method within the model has successful results on students' creative productivity and self-efficacy (Starko, 1986). It has also been established that the model can meet the educational needs of gifted children (Olenchak, 1991), while the talent development approach adopted by the model can also be beneficial for different student groups, including young people with Williams Syndrome (Reis et al., 2003).

## An overview of the large range of geographically and culturally different regions in which the SEM is being used in the world

The SEM is one of the most widely recognized and successfully implemented enrichment models for gifted and talented students in both the United States and many other countries around the world. Several indicators can be used to illustrate the large range of geographically and culturally different regions in which the SEM is being implemented.

The number of schools using the computer-based Renzulli Learning program across countries can serve as one example. Renzulli Learning is an online enrichment software, based on the SEM, that uses technology to differentiate in the classroom, matching educational resources with students' abilities, interests, and learning styles to enrich and challenge their learning opportunities. In total, 7671 schools from 30 different countries around the world have used Renzulli Learning to date.[1] Of these, approximately 6136

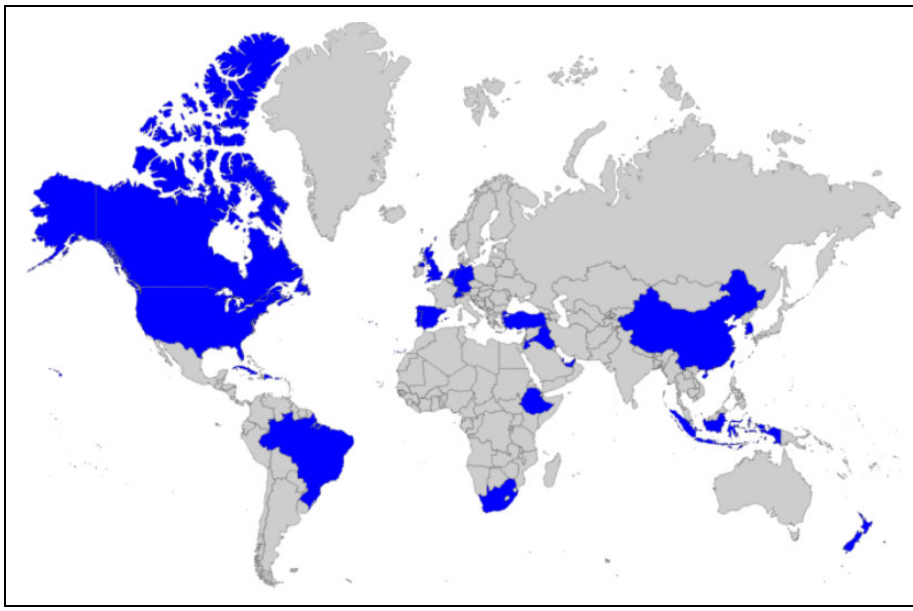

**Figure 1.** Countries with schools that have used the Renzulli Learning around the world to date (August, 2012). North America: United States and Canada; Caribbean: Bermuda, Cuba, Dominican Republic, Grand Cayman, and Puerto Rico; South America: Brazil; Europe: United Kingdom, Germany, Netherlands, Portugal, Switzerland, Spain, and Turkey; Middle East: Bahrain, Iraq, Jordan, Qatar, and United Arab Emirates; Asia: China, South Korea, Singapore, and Taiwan: Oceania: New Zealand and Indonesia.

(80%) are in the United States and 1534 (20%) abroad. In North America, schools in United States and Canada have used the program. A group of regions in the Caribbean have also implemented Renzulli Learning in their schools. These include Bermuda, Cuba, Dominican Republic, Grand Cayman, and Puerto Rico. In South America, the use of this online tool has been reported only in Brazil. The European countries that have used the software include United Kingdom, Germany, Netherlands, Portugal, Switzerland, Spain, and Turkey. In the Middle East, Bahrain, Iraq, Jordan, Qatar, and United Arab Emirates belong to this group. China, Indonesia, South Korea, Singapore, and Taiwan are countries where Renzulli Learning has been used in Asia. Also, schools in New Zealand and Indonesia have implemented the program. In Africa, schools in Ethiopia and South Africa have reported utilizing Renzulli Learning (Figure 1).

Another indication of the implementation of the SEM in many different regions of the world includes the fact that educators from 29 countries have participated in the annual summer institute at the University of Connecticut (Confratute[2]), over the last four years (2009–2012). These countries have included the United States and Canada in North America; Brazil in South America; Bermuda and Panama in Central America and the Caribbean; Germany, Netherlands, Switzerland, Turkey, Austria, France, Greece, and Spain in Europe; Lebanon, and Saudi Arabia in the Middle East; Bangladesh, Hong Kong, Philippines, South Korea, Singapore, China, India, Thailand, Malaysia, and Japan

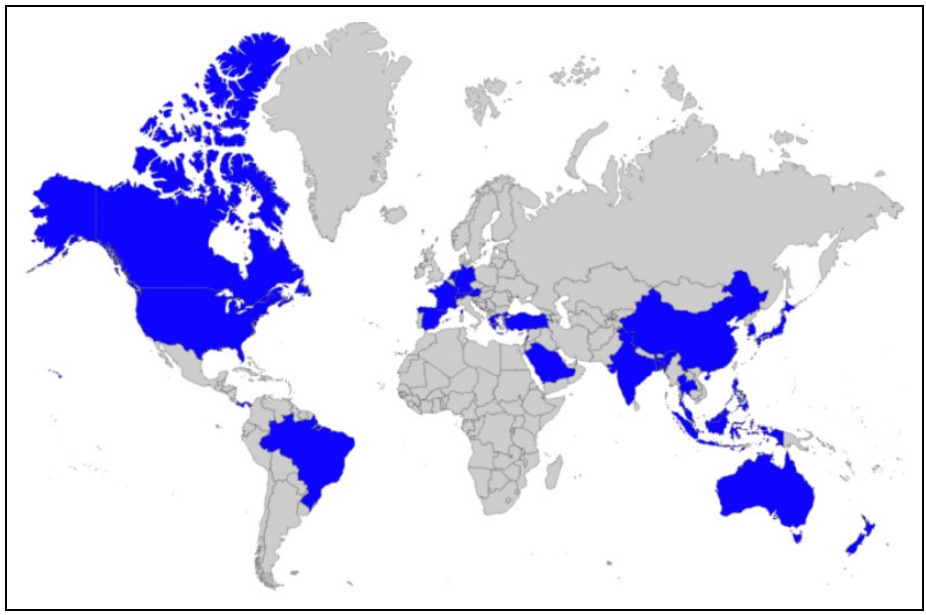

**Figure 2.** Countries of the participants in Confratute, Annual Summer Institute on Enriched-based Differentiated Teaching at University of Connecticut, over the last four years (2009–2012). North America: United States and Canada; South America: Brazil; Central America and Caribbean: Bermuda and Panama; Europe: Germany, Netherlands, Switzerland, Turkey, Austria, France, Greece, and Spain; Middle East: Lebanon and Saudi Arabia: Asia: Bangladesh, Hong Kong, Philippines, South Korea, Singapore, China, India, Thailand, Malaysia, and Japan; Oceania: Australia New Zealand and Indonesia.

in Asia; and Australia, New Zealand, and Indonesia in Oceania (Figure 2). These data provide evidence of the commitment of some countries to develop educational programs and initiatives based on SEM for gifted education and talent development.

Finally, the translation of numerous articles and books on the SEM into different languages, such as Spanish, Portuguese, Turkish, German, Chinese, Japanese, Korean, Russian, Arabic, Greek, and Russian, also provides evidence of extensive interest in the model within the international arena.

## Reasons behind the widespread adoption and acceptance of the SEM in the international arena

The wide acceptance of the SEM globally can be attributed to multiple reasons. Sytsma (2003) has identified three main motives for the emerging interest in the model. First, many countries have expanded their conceptions of giftedness in recent years. Most researchers today believe that giftedness is better represented from a multidimensional conception of intelligence in relation to other personal and environmental variables. In this context, administrators and educators have found in the SEM, and the recent addition of

co-cognitive components, a theoretical proposal that allows them to consider the interaction of a number of cognitive and non-cognitive variables that determine the manifestation of giftedness, such as above average ability, creativity, task commitment, courage, optimism, physical and mental energy, leadership, and empathy (Renzulli, 2005).

Second, the SEM is compatible with the social philosophy of a large number of countries willing to foster excellence in education without elitism. Many countries, especially in Europe, have been reluctant to implement educational initiatives for gifted students because traditional programs tend to promote school segregation. However, the major goal of the SEM is the application of gifted education pedagogy to overall school improvement by providing enrichment opportunities for broader populations under "a rising tide lifts all ships" approach (Reis and Renzulli, 2003; Renzulli, 1998).

Third, the development of social and human capital has become a major goal of the most modern and advanced societies. Consequently, the focus on productive creativity at the core of the SEM has been adopted by many countries and inspired the development of numerous programs for general and high-ability populations. An example of this paradigm shift can be seen in some Asian countries such as Korea, Japan, or China where, despite consistently being the top-performing nations in the international educational rankings in the areas of Math and Science, the development of creativity and leadership has been established as a national goal over the last decade (Chan, 2000, 2007; Renzulli, 2005).

Other reasons for the widespread adoption of the model are its flexibility and ease of implementation. These characteristics allow states, districts, and schools to develop their own programs based on local resources, particular school dynamics, and the personal needs of their students and teachers. For example, the SEM has recently inspired a national project in Brazil designed to meet the educational needs of gifted students and provide training and support opportunities for their teachers and families. The project includes several components of the SEM, such as a total talent portfolio to determine students' abilities, interests, learning styles, and preferred modes of expression, and Type I, II, and III enrichment opportunities to guide the educational practices of teachers and students. In addition, the project has an enrichment team that includes a designated coordinator, designated teachers for the evaluation and education of the students, regular staff development opportunities, and a plan for parent and community engagement (De Souza and Soriano, 2010).

An additional explanation for the international expansion of the SEM is that a large fraction of the components of the model are already an inherent part of the education policies of numerous countries around the world. In these cases, the SEM provides administrators and educators an organizational structure to implement, in an orderly and coordinated manner, the components that they already use.

Moreover, an additional advantage of the SEM is that it does not intend to replace the general curriculum, but to be an enhancement to it. The SEM offers different services and components to infuse enriched and challenging opportunities in one or all aspects of the general curriculum. This allows schools to complement and enhance their own programs without rejecting the prescribed curriculum or replacing existing initiatives.

Finally, SEM pedagogy can be applied across a number of content areas in a wide variety of settings. This may have also contributed to the broad acceptance of the model

around the world. Projects like Mentoring Young Mathematicians ($M^2$), Mentoring Mathematics Minds ($M^3$), and Schoolwide Enrichment Model-Reading (SEM-R) allow implementation of the model in specific subject matters without the need to mobilize the entire school, which is especially appropriate in contexts with little tolerance and/or enthusiasm for gifted education and talent development.

## A word from the creator of the model: An interview with Joseph Renzulli

The authors of this article interviewed Dr Joseph S Renzulli, creator of the SEM, on the cultural adaptability of the model. This interview was conducted at the National Research Center on the Gifted and Talented (NRC-GT) in June 2012. At the time of the interview, Dr Renzulli was the director of the NRC-GT and a University of Connecticut Board of Trustees Distinguished Professor.

### *Which country was the first one who wanted to adapt the SEM to their culture?*

Early on, I would say, in the 1970s, most of the SEM was in the US and Canada. Canada's culture is very much like American culture and it was probably to be expected. We used to have a very large number of people coming from Canada to Confratute. Dr. Sally Reis and I and other members of our group were doing lots and lots of workshops up in Canada. But I think that outside of North America, probably in the early 1980s, I would say that an interest developed in Europe. I was on a sabbatical leave and I went to Europe for a couple of months and gave what seemed like a thousand lectures at different universities. And one of the things I found was that SEM was very compatible with the social philosophy of the socialist democracies. That is, they were not in favor of separate programs because they have just had a world war where some people were supposed to be better than others, and so there was an interest there again based in their democratic social philosophy.

Then, in the 1990s, I would say, I started to get a lot of interest in Asia (Korea, Japan, Taiwan, China, Philippines). One of the reasons for that was that these countries very much wanted to develop their high-level talent and their concept of talent development was very driven by achievement caps where they basically practiced, practiced, and practiced. They became interested in why does America have so many designers and people who have won Nobel prizes and things like that, and that continues to this day. Now, probably beginning around 2000, a lot of development started, mainly because of the same reasons, in the Middle East. I have been to Jordan, Israel, Dubai, and other countries in the Middle East. And again, I think that the reason is that they are starting to view intellectual and creative talent as very renewable natural resource. I have also given lectures in South America. In Brazil, for example, there is a very strong interest in SEM, mainly because one of the leading professors of giftedness there is one of my former doctoral students. And I would say the same is true in Australia and New Zealand. We have been there giving workshops, we have written articles for Australian journals, and so I think that is not probably unlike the situation in Europe.

### *Do you consider the adaptation process to be different depending on the country?*

I would say that there are differences. And again, a lot of that has to do with the conception of giftedness. In many of those countries, including the European countries, the academics are still very much concerned with test scores. Since they are persons who are influential in getting schools to develop programs, they sometimes were more concerned about test scores than I would like them to have been. But they do like the idea of providing Type I and Type II general enrichment to all students, and using the way kids respond to that general enrichment as what I call an identification situation, that is a child that is very excited and enthusiastic about some Type I or Type II training or both, and then they extend to a longer term Type III project, which is where my focus is. My focus is not on advanced, accelerated learning or traditional testing, as much as much as it has been on creative productivity.

### *What are the steps to be followed when adapting the model in another country?*

I think that the first step is full understanding of the model. I have had many questions about this: "Is this model for all kids"? I try to explain that it consists of general enrichment for all kids and opportunities to follow up for kids that are highly motivated. I think that understanding the model is the first thing, and the pedagogy that surrounds the model, the Triad, which is the pedagogy and a rational for school wide enrichment. Until people start to understand that learning can be guided towards development of thinking skills, creativity, and creative productivity in students, not just text consumption or test preparation, they have to understand these goals and also they have to be supportive of them. If they feel like they are under a lot of pressure, it is more of a challenge. I know in the Asian countries all they do is to speak about how high their scores are, and I would say there is nothing wrong with that. However, they still have a low record of inventors and designers and people who make important contributions. I think that is why we have so much interest in our work in the Asian countries.

### *Who plays the most important role in the adaptation of the model: teachers, principals, or students?*

I think it has to be a combination of both leaders and teachers. Administrators have the power to make something happen. They can say yes, we are going to develop the SEM. Teachers, on the other hand, have the power to deliver the model in a fairly and authentic form, with the right training. I think it is really administrators and teachers working in combination. That is how when I see the most successful implementations.

### *Which element or concept should not be changed in your program?*

I think that at least two major things. One of them is giving more young people opportunities for experiences that lead to high-level creative productivity. Before, there were only kids that were certified as gifted and this is not to say that they should not have lots of opportunities, but there are kids in some cases below any arbitrary cut off point set by the school or

the district or the ministry. So, the most important concept is looking for giftedness as developmental. Developing giftedness in young people rather than saying some of them are born gifted with an extra gene or chromosome, which is what people that are very obsessed with IQ are all about. I think that the second thing is staff development. Training teachers for a different brand of teaching – the type of teaching that I advocate when it comes to talent development. There will be teaching that is not just focus on memorization; there is not focus on just finding the right answers. There is no focusing on always following logical steps in doing things. Those things that great inventions come from, great people who are recognized because of their innovative ideas. I think that a program should place equal value on creative productivity and I always say people if you are not interested in creative productivity you can go and find an acceleration model. Our model is different than acceleration. Another important thing is the training of teachers to give them the skills to do those different things. How do you ask questions for which there are no single predetermined correct answers? How do you inspire kids to self-select a topic for a science project or for a short story, book, or article that they might want to write? So, the whole vision of the school needs to be geared towards some of the kinds of things that do not necessarily show up well on tests, but are very important to the creative productivity of the future.

## *What is the most challenging part during the adaptation?*

Well, I am probably repeating myself a little bit here but certainly a lack of administrative support. If the administration is not willing to let this happen – I have been in some places where the ministry said very proudly they can tell you what page in Mathematics every 8-year-old is on on a given day in the country. So it is a very prescriptive program. First of all, it does not say a lot about individual differences or things like using differentiation or curriculum compacting. Secondly, students take on an idea that just giving the right answer, passing the test, is the focus, is the goal in and of itself. I always say that none of the things that we learned in school from basic reading, mathematical skills, writing and all of the higher level thinking skills, critical and creative thinking, problem solving, and decision making have any value until they are applied to something that is hopefully a primary interest of an individual student or students working together in a group. I think it is very important that the *application* of knowledge and thinking skills should be emphasized in the SEM program.

## *What would be the most important advice you may want to give to people who want to use your model in the future?*

Well, I think that the most important advice that I can give someone would be to learn what this model is all about, and why we have developed this kind of model. I already mentioned one of the purposes of a gifted program is the individual self-fulfillment and contributing to the reservoir of people who will become the scientists, artists, the philosophers, the business people, politicians, the leaders of our world. I think that one of the things that are very important is that we create a model that makes sense to us and fits in with our vision of the future role of education in a country. We want the kinds of people who will create jobs and contribute to the art and literature and scientific advancements of a country. Now, in some countries it is probably the opposite of what they see their schools for. Their schools are often places for

obedience and conformity – especially in places where there is a strong focus on religious factors.

There was a woman in United States many years ago who campaigned teachers against critical thinking. If we ask children to think critically they might say, "I don't think this is such a good idea." I have seen examples of adults who preach the rights of women, but do not let their daughters follow a scientific major in college. When it comes to understanding what creative productivity is all about and accepting it as something valuable to a country then we can promote economic and cultural growth. Now this is not to say that we are going to get rid of the basic skills learning. That will always be there. The political and pedagogical forces are too strong to ever get rid of that. However, I think that when we think about the future of a country, we have to think about it in terms of the generation of ideas; ideas that will start small businesses or an entire industry. People like Steve Jobs and Bill Gates. Just a few ideas create millions of jobs and billions of dollars have been generated by their creative ideas and their willingness to see their ideas through to fruition. So I think that understanding the value of ideas for a country is very important. On this other issue, I think somebody has to be the leader or the waver of the flag in a country. It is not going to happen if there is not the person or persons that say, "We are going to advocate this among educational leaders, among policy makers, ministry people, and we are going to provide some of the kinds of 'know how' and teacher trainings, that will implement the model." Then, even an idea that people might say, "That is a good idea" may still be missing out on the action orientation to say how to put it into practice. But somebody has to be the leader. Articles, conferences, presentations to officials, those are all kinds of things that I think cause people to say there is some value for our country in promoting a schoolwide enrichment approach to education.

## The SEM international network: a communication and resources sharing vehicle

The coherence between the SEM pedagogy and the social principles of equity, inclusion, and excellence of democratic societies support its flexibility and ease of implementation. Other features of the model introduced in this paper point out the SEM as a valuable initiative that can be potentially adapted to any educational system to promote gifted education and talent development.

However, the implementation of the SEM may pose dissimilar challenges and difficulties in different regions of the world. For example, differences in the national definition of the term giftedness, existing policies for the gifted and talented, and the sensitivity to the needs of these students determine how the model can and should be adapted. Other issues, such as gender-based segregation or the access of minority groups to education may also contribute to different implementations of the SEM in diverse educational and cultural settings. Additionally, and despite the growing number of translations that have been made in recent years, most of materials and resources on the SEM are still available mainly in English, so that countries in which this language is not spoken extensively may find it more challenging to use the model.

With the aim to facilitate the adaptation and implementation of the model in different regions of the world, the Schoolwide Enrichment Model International (SEM-I) Network has been recently created. The SEM-I Network is a vehicle to connect SEM users around

the world and facilitate the sharing and accessing of resources for talent development. It aims to serve as an international forum for discussion, research, and exchange of best practices on the use of the SEM from a cross-cultural perspective.

The SEM-I Network integrates SEM users around the world and people interested in sharing experiences, resources, and materials that could bring added value and inputs from different perspectives on the use of SEM in different countries, cultures, and contexts. To date, more than 350 people have joined the network. Members include parents, teachers, principals and program managers, researchers, and faculty from over 30 countries.

The network facilitates a selection of the best theory-based and research-supported resources to help members understand the philosophy of the model and the possibilities to use it for engagement and enrichment learning for all students. These resources also illustrate practical examples and educational strategies for its implementation in different educational settings. Information about web-based resources and various professional development opportunities, such as conferences, webinars, courses, and special certificate programs, is also given.

Moreover, it provides educators and administrators with the opportunity to share and exchange their ideas about the cultural adaptability of the SEM. Members can learn how others have successfully adapted the components of the model to their educational and cultural settings, developed resources and materials for talent development, and overcome challenges in the implementation of the model.[3]

## Conclusions

The SEM is one of the most widely and successfully implemented model for gifted education and talent development in the United States and many countries around the world. The model is an organizational model for total school improvement that allows each school the flexibility to develop its own unique programs based on local resources, student demographics, and school dynamics as well as faculty strengths and creativity (Renzulli, 1994).

However, there are some non-negotiable elements in the implementation of SEM that are indispensable and mandatory, regardless of the features of school, culture, or country where the model is adapted (Reis and Renzulli, 2009; Renzulli and Reis, 2008). First, it is essential to read the book *The Schoolwide Enrichment Model: A Comprehensive Plan for Educational Excellence* (Renzulli and Reis, 1997) to understand the objectives, components, and procedures of the SEM. Second, it is necessary to document the skills, interests, and styles of the students to make decisions about individualized enrichment opportunities provided in the SEM. Third, SEM programs must have specialized personnel who devote most of their time to working directly with students, teaching advanced courses, and coordinating enrichment services in the schoolwide enrichment team.

Additionally, there are other elements that should guide all SEM implementations. These are the three common goals that all SEM schools and programs must meet – what is called the three Es of teaching and learning: enjoyment, engagement, and enthusiasm (Renzulli, n.d.). High-end learning only occurs when teachers and students enjoy what they are doing, get involved, and pursue personal topics and activities of interest.

Overall, this article provides a roadmap to guide the implementation and adaptation of the SEM for talent development worldwide from a cross-cultural perspective. Future research should be directed towards learning how different schools and programs have adapted the SEM, identifying challenges found in the process, and comparing common and differential aspects in the adaptation of the model in different educational and cultural contexts. Only the analysis of these aspects will provide policy makers, administrators and teachers with concrete tools to successfully implement this unique model for gifted education and talent development around the world.

## Funding

This research received no grant from any funding agency in the public, commercial or not-for-profit sectors.

## Notes

1. Information provided by Compass Learning in August, 2012.
2. Confratute is the longest running summer institute on enrichment-based differentiated teaching held at the University of Connecticut. Confratute is geared towards providing educators with research-based practical strategies for engagement and enrichment learning for all students, as well as meeting the needs of gifted and talented students. More information at: http://www.gifted.uconn.edu/confratute/.
3. Joining the SEM-I Network is absolutely free. If you would like to join the SEM-I Network or have any questions or concerns, please email Daniel Hernandez-Torrano at d.hernandeztorrano@gmail.com or Adile Gulsah Saranli at gsaranli@gmail.com.

## References

Chan DW (2000) Developing the creative leadership training program for gifted and talented students in Hong Kong. *Roeper Review* 22: 94–97.

Chan DW (2007) Creative teaching in Hong Kong schools: Constraints and challenges. *Educational Research Journal* 22: 1–12.

De Souza D and Soriano EM (2010) Implementing the Schoolwide Enrichment Model in Brazil. *Gifted Education International* 26: 169–177.

Delcourt MAB (1993) Creative productivity among second grade students: Combining energy, interest and imagination. *Gifted Child Quarterly* 37: 23–31.

Hébert TP (1993) Reflections at graduation: The long term impact of elementary school experiences in creative productivity. *Roeper Review* 16: 22–28.

Olenchak FR (1991) Assessing program effects for gifted/learning disabled students. In: Swassing R and Robinson A (eds) *NAGC 1991 Research Briefs*. Washington, DC: National Association for Gifted Children.

Reis SM and Renzulli JS (2003) Research related to the schoolwide enrichment triad model. *Gifted Education International* 18: 15–39.

Reis SM and Renzulli JS (2009) The schoolwide enrichment model. A focus on student strength and interests. In: Renzulli JS, Gubbins JE, McMillen KS, et al. (eds) *Systems and Models for Developing Programs for the Gifted and Talented*. Mansfield Center, CT: Creative Learning Press, Inc, pp. 323–352.

Reis SM, Schader R, Milne H, et al. (2003) Music and minds: Using a talent development approach for young adults with Williams Syndrome. *Exceptional Children* 69: 293–314.

Renzulli JS (1978) What makes giftedness? Re-examining a definition. *Phi Delta Kappan* 60: 180–184.

Renzulli JS (1986) The three ring conception of giftedness: A developmental model for creative productivity. In: Sternberg RJ and Davidson J (eds) *Conceptions of Giftedness*. New York: Cambridge University Press, pp. 332–357.

Renzulli JS (1994) *Schools for Talent Development: A Practical Plan for Total School Improvement*. Mansfield Center, CT: Creative Learning Press.

Renzulli JS (1998) A rising tide lifts all ships: Developing the gifts and talents of all students. *Phi Delta Kappan* 80(2): 105–111.

Renzulli JS (2005) The three-ring conception of giftedness: A developmental model for promoting creative productivity. In: Sternberg RJ and Davidson J (eds) *Conceptions of Giftedness* (second edition). Boston, MA: Cambridge University Press, pp.217–245.

Renzulli J. S. and D'Souza S. (2012) Intelligences outside the normal curve: Co-cognitive factors that contribute to the creation of social capital and leadership in young people. In A. Ziegler, C. Fischer, H. Stoeger, and M. Reutlinger (eds.), *Gifted education as a lifelong challenge. Essays in honor of Franz J. Monks* pp.171–191. Berlin: LIT Verlag.

Renzulli JS (2012) Re-examining the role of gifted education and talent development for the 21st century: A four-part theoretical approach. *Gifted Child Quarterly* 56: 150–159.

Renzulli JS (n. d.) The three Es for successful academic achievement. Available at: www.gifted.uconn.edu/sem/pdf/Three_Es.pdf (accessed 1 June 2013).

Renzulli JS and Reis S (1997) *The Schoolwide Enrichment Model: A How-to Guide for Educational Excellence*. Mansfield Center, CT: Creative Learning Press.

Renzulli JS and Reis SM (2008) *Enriching Curriculum for all Students* (second edition). Thousand Oaks, CA: SAGE Publications.

Renzulli JS and Reis SM (2013) The schoolwide enrichment model: A focus on creative productivity, strengths, and interests. In: Callahan CM and Hertberg-Davis HL *Fundamentals of Gifted Education: Considering Multiple Perspectives*. New York, NY: Routledge, pp. 199–211.

Starko A (1986) *It's About Time: In-service Strategies for Curriculum Compacting*. Mansfield Center, CT: Creative Learning Press.

Sytsma RE (2003) The schoolwide enrichment model around the world: An overview of component application in five countries. *Gifted Education International* 18: 58–66.

## Author biographies

**Daniel Hernández-Torrano**: Dr Hernández-Torrano is an assistant professor at Nazarbayev University Graduate School of Education. He obtained his PhD in Educational Psychology from the University of Murcia in Spain, and has held research positions at the University College London (UK), Universidade do Minho (Portugal), and University of Connecticut (USA). His main areas of interest are modern approaches to intelligence, creative and critical thinking in the area of science, and the education of gifted and talented students.

**Adile Gulsah Saranli**: Dr Saranli received her undergraduate and masters degrees in Guidance and Counseling Psychology. While continuing to work as a counseling psychologist, she received her doctoral degree in Child Development with her doctoral thesis focusing on gifted children and their families. Dr. Saranli is a member of TED University School of Education, and conducts research on gifted education, methods for supporting gifted children and innovative techniques in education.