

## INNOVATIVE TEACHERS, WHO ARE YOU? INNOVATIVE TEACHER ANALYSIS IN THE LIGHT OF THE MODEL OF THE ‘BIG FIVE’ PERSONALITY TRAITS

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**Abstract.** In the 21<sup>st</sup> century, reality, characterized by volatility, uncertainty, complexity and ambiguity, together termed VUCA, change constantly occurs throughout social, technological, economic, environmental, educational, and political (STEEEP model) aspects of society. Therefore, education systems need to adopt innovative approaches to adapt to the frequently changing world. In this study, educational and pedagogical innovation is regarded as including whatever constitutes a change in all areas to which education relates. As teachers are one of the most crucial factors in influencing students’ academic success, and as they must rapidly adapt and constantly innovate to adequately prepare their students for ever-changing circumstances, it is essential to identify traits of innovative teachers. The main goal of this study is to characterize the personality traits of innovative teachers according to the Big Five Personality Traits model, referred to as the NEO-AC model, using qualitative and quantitative methods. The findings show that innovative teachers perceive themselves as first and foremost open to experiences. They are curious people with highly developed imaginations and a wide range of interests. Innovative teachers also may be unconventional, capable of putting together plans and projects from several different disciplines.

*Keywords:* innovative teacher; model of the Big Five

### Introduction

The new normal of the 21<sup>st</sup> century is a reality characterized by the combination of four criteria: Volatility, Uncertainty, Complexity, Ambiguity – VUCA (Bennett & Lemoine 2014).

The reality of VUCA is further illustrated in times of rapidly evolving crisis, such as the Coronavirus crisis. Schools must adapt themselves, searching for new means of effective conduct, to continue to provide relevant education for their students.

In the VUCA reality, the trends of change are expected to be reflected in a variety of areas of life: social, technological, economic, environmental, educational, and political (STEEEP model), (Kyler 2003). To cope with these changes, education systems in the 21<sup>st</sup> century face significant challenges including developing the ability to adapt to the frequently changing world. Therefore, innovation is necessary for this system (Thurlings, Evers & Vermeulen 2015).

### **Innovation**

Innovation is mentioned as one of the critical skills for success at work and in learning in the 21<sup>st</sup> century (Barak, Morad & Ragonis 2013; Pellegrino & Hilton 2012). According to Buster-Miriam Dictionary, innovation is defined as a process that leads to making changes to an existing thing by creating something new and applied, or making a significant improvement to something already existing.

### **Innovation in education**

Pedagogical innovation is innovation connected to learning. Pedagogical innovation is a concept derived from organizational innovation when there are characteristics that refer to a particular type of organization – schools or institutes of higher education. Rogers (2003), when examining the nature of change in education systems, divides it into three main categories: continuous innovation, dynamically continuous innovation, and discontinuous innovation. According to Stukalenko et al. (2016) pedagogical innovation combines three main pedagogical processes in education: creating, achieving and implementing innovations, with changes also possibly manifested in relationships with parents, professional development, and social ties. Furthermore, pedagogical innovation may be regarded as introducing completely new ways of teaching, moving away from techniques prevalent in the past.

Educational innovation can occur due to a local initiative in schools, an initiative of the local authority or of the public system, and the Ministry of Education. When we refer to the concept of educational and pedagogical innovation in this study, we will refer to the broadest definition of the concept: educational and pedagogical innovation will be that which constitutes a change in all the various areas to which education relates to.

### **The importance of teachers in advancing processes in the education system**

Teaching is one of the most crucial factors in influencing students' academic success. According to a McKinsey report, "The level of achievement does not exceed the quality of the teaching" (Barber & Moushed 2007) hence the quality of an education system cannot exceed the quality of its teachers. Furthermore, the countries with the best achievements in education have been found to recruit personnel of the highest quality to work in education, who develop education-

training systems and ensure the best possible teachers are provided for each child. High quality teachers may also become leaders and agents of change, introducing innovation to both the curriculum and methods of tuition (Bascia et al. 2015; Van der Heijden et al. 2015).

Several studies have shown that teachers tend to interpret educational and learning goals and programs according to their attitudes and personalities (Fuller 1970; Kremer 1978). Therefore, there is value in examining innovative teachers' personalities as part of a mapping system designed to detect traits characterizing innovative teachers. The variance between teachers has been studied in the past as aspects of its impact on student achievement (Waters, Martzano & McNulty 2003). Teachers, like students, have unique learning styles and individual problem-solving needs (Serjovanni 2002).

We can identify two main educational approaches: one establishes a constructivist approach to learning as developed by Dewey, Bruner, Piaget and Vygotsky (Bruner 1990; Hickman & Alexander 1998, Jaramillo 1996; Piaget 1972; Vygotsky 1978). Teaching and learning are generally based on the learner and their teacher's needs, uniqueness, personality, and learning pace. The other is positivist like Comte (Wright 1986; Shelsky & Arieli 2016) in which there is an attachment to a pre-dictated learning plan.

The personality attributes of teachers may make them better suited to one style of teaching or another. When perceiving teaching through a positivist lens, it would seem that being consistent, disciplined and obedient may be excellent attributes for teachers. On the other hand, when taking the social constructivist approach, qualities such as autonomy, flexibility, creativity and entrepreneurialism may be more desirable, allowing teachers to adapt the curriculum to individual students while addressing each student according to their changing needs and changing environmental demands. A teacher with conservative teaching attitudes (Kerlinger 1958) and a closed belief system (Rokeach 1960) may find it difficult to create innovative learning systems because of the intrinsic contrast between innovation and conservatism, the flexibility and openness required for innovation.

Most research in this field has focused on identifying the characteristics and individual traits that enable individual or group innovation. According to the five-factor model of personality, Costa & McCrae (1992), they identify various behaviours and personality traits attributed to five-character dimensions.

### **The 'big five' personality traits model**

In the 1920s, an attempt began to map various personality components to create an agreed taxonomy. Researchers started to classify categories in terms designed to describe personality, but many categories overlapped, and there were no clear boundaries to each category (Norman 1967). These led to the consensus in the 1960s that five general personality traits have been dubbed "The Five Big"

(Goldberg 1981). In general, these traits relate to the following aspects: emotional, interpersonal, experiential, and motivational aspects that exist in every person.

Traits are forms of behaviour, thoughts, and emotions that encompass a wide range of situations and thus characterize the person. Personality traits and motivations are usually determined by people answering questionnaires about themselves (self-reporting). Each trait can be treated as a position on the self, thus introducing the world of traits to a familiar theoretical structure that has been extensively researched (Kaniel 2010).

The traits that people attribute to themselves are based on the inferences they make about themselves. Choi, Nisbett & Norenzayan (1999) refer to explanations that people give to various phenomena in their lives. Kaniel (2010) addresses multiple aspects in this context, for example, the degree of control a person has over causation (internal or external), the degree of inclusion in the timeline (fixed, stable or unstable - temporary), and the degree of generalization of the statement, (related to a specific or general factor). The unifying factor of these dimensions is the degree of responsibility that the person assumes about the problem under discussion (Kaniel 2010).

The Big Five personality traits as described by Costa & McCrae (1992, 1987) or five domains of the “five-factor model-NEO-AC” (Costa & McCrae 1992) are as follows:

- Emotional Stability vs Neuroticism (N) - represents a person's ability to remain calm and confident in their mind when experiencing negative emotion and anxiety. This expresses the degree of adjustment and mental stability. People characterized by a high level of neuroticism are more likely to suffer from anxiety, feel self-conscious, experience anger and hostility, be impulsive and vulnerable.

- Extraversion (E) vs. introversion – describes the extent to which people are sociable, assertive, energetic, talkative, gregarious, enthusiastic, excitement seeking and outgoing. The degree of extraversion describes the extent to which a person tends show these characteristics of their personality. The introvert, the low-ranking extrovert, may be more reserved, reflective, quiet, and prefer their own company.

- Openness (O) vs. closedness to experience – this criterion represents a person's intuition, creativity, tendency to fantasize, responsiveness to aesthetics and their willingness to explore new intellectual ideas, as well as taking an interest in a wide range of fields. Qualities that characterize a person with a high rating of openness to experiences include: curious, imaginative, artistic, wide interests, excitable and unconventional. On the other hand, people with low levels of openness may have stereotyped patterns of thought and be narrow-minded, with limited areas of interest.

- Agreeableness (A) vs. antagonism – describes an approach to interpersonal relationships. People characterized by a high level of this trait are forgiving, amiable, altruistic, demonstrate trust, compassionate, are not stubborn, do not show-

off and are sympathetic. People who are short in this dimension are characterized as being abrasive, manipulative, argumentative, judgmental, self-centred, arrogant, suspicious, aggressive and demanding.

– Conscientiousness (C) vs. lack of direction – conscientiousness describes people how are competent, self-disciplined, efficient, behave ethically, organized, not careless, thorough and achievement orientated. A low level of conscientiousness (lack of direction) indicates a low level of commitment, a tendency to self-indulgence, irresponsibility, and carelessness, inability to delay gratification with a preference for enjoying the moment rather than working hard.

This study will analyze innovative teachers' characteristics according to the Big Five Personality Traits model, referred to as the NEO-AC model (Costa & McCrae 1987, 1992). The study has theoretical and practical significance.

The main goal of the study is to characterize the personality traits of innovative teachers. This knowledge will make it possible to identify the essential qualities, which are key to identifying innovative teachers.

### **Main hypothesis**

The study hypothesizes that there are personality characteristics that characterize innovative teachers.

### **Research Methodology**

The study combined qualitative and quantitative tools, methods, and approaches to meet the goals set by Classen & Lopez (2006) and Onwuegbuzie & Leech (2004).

It is important to note that mixed methods research is not just a collection of quantitative and qualitative data, but that the two methodologies complement each other, allowing the combination and comparison of the data, with the synthesis producing a more complete analysis of results.

The quantitative research included the analysis of five personality traits questionnaires, using a standard and accepted questionnaire for personality assessment (John, Donahue & Kentle 1991). The questionnaire had been translated to a Hebrew Version with permission (Etzion & Laski 1998).

The questionnaire includes 44 statements, and examines the following five traits: (a) Emotional Stability / Neuroticism (N) (b) Extraversion/ Introversion (E) (c) Openness to Experience (O) (d) Agreeableness (A) (e) Conscientiousness (C). In this questionnaire, the subjects were asked to express their agreement with the statements that reflect the above five characteristics. The answers to the questionnaire are on a Likert scale, ranging from 1-5.

The qualitative study provided data in depth from interviews with innovative teachers. The qualitative data were analyzed and categorized using Narralyzer software based on classifications into categories of representations from the questionnaire.

The questionnaires were independently and voluntarily answered by 30 teachers who define themselves as innovative. Furthermore, seven interviews were conducted with innovative teachers. There were a total number of 37 participants, all of them being teachers who define themselves as innovative. The innovative teachers were from a wide range of school types: elementary school (12 teachers), middle school (8 teachers), high school (13 teachers) and college (4 teachers); different genders, and from a variety of sectors (state schools, colleges, religious schools). Furthermore, the innovation fields were diverse: Innovation in learning technologies (16 teachers), Social innovation (11 teachers), Innovation in evaluation (10 teachers) and Innovative learning practices (11 teachers). The decision to turn to teachers who define themselves as innovative stems from the need to examine teachers' state of mind. Hence there is value in reviewing the conditions that will allow them to reach this consciousness.

The questionnaires in Hebrew were found to have high reliability: (a) for conscientiousness (C) and neuroticism (N) Cronbach's alpha reliability ( $\alpha$ ) = 0.72; for agreeableness, (A)  $\alpha$  = 0.77; for Openness to new experiences (O),  $\alpha$  = 0.82 and for extroversion (E),  $\alpha$  = 0.88.

The qualitative research tools are semi-structured in-depth interviews with innovative teachers from various schools, as mentioned above. The interviews were documented by a continuous, complete, and accurate description of the course of events. The interviewees' freedom of response was broad, and it was possible to comment on new points raised during the interview. (Sabrar-Ben Yehoshua 1999; Shakedi 2015).

### **Limitations of the study**

The response to the questionnaire was voluntary, as was participation in the interviews so that there may be a segment of the population, those who did not turn up to be interviewed or those who see their activities as a reason for modesty and secrecy, whose voices were not heard in this study. Also, the quantitative questionnaire is in self-reporting, which can create a particular bias in its results.

### **Results**

The research hypothesis is that there are some personality traits shared by innovative teachers.

The in-depth interviews with seven innovative teachers were analyzed, and five critical themes were extracted from the interviews. These themes converged in principle to five main themes that correspond with the five great personality traits.

#### ***Theme 1: Emotional Stability vs Neuroticism (N)***

##### ***Optimism***

In this theme, innovative teachers displayed characteristics of great optimism in the way they see the world and their ability to succeed in the project they initiated. In

general, innovative teachers stated that they believe they will succeed in achieving their project goals as they have defined them.

Simultaneously, the innovative teachers demonstrate emotional complexity regarding their project, typified by the statement that even if it won't succeed at the moment, it definitely will succeed later, and then it will achieve more. This indicates reflective and critical elements regarding their projects. It is evident that the essential aspects related to the way they see the world motivate them. Sometimes the innovative teachers present themselves as challenging the existing rules and the accepted assumptions in the school.

Quotes from statements typical of their responses to in-depth interviews were:

O: "I believe that it's also doing good things for the organization. Others react and say, what an evening it was at school."

H: "I am not frightened of situations of uncertainty."

C: "There are several teachers whose eyes are shining with enthusiasm again."

C: "The current grade 10, who studied this way in the ninth-grade last year, half of them already feel better (with the different learning style). So they appreciate the system."

In the John, Donahue & Kentle (1991) questionnaire, this theme received an average score of 3.104 (the standard deviation was 0.562, and Cronbach's alpha internal reliability level was 0.734). From this, we learn that innovative teachers display a great deal of emotional stability.

### ***Theme 2: Extraversion vs. Introversion (E)***

Innovative teachers show signs of extraversion and involvement in their communities. They place importance on collaborating with others, they are enthusiastic while talking about their innovation and seem to be adventurous in all of their activities: in planning stages, while executing programs, and in making the results known and publishing them.

*Quotes:*

*Believes herself and in her self-worth*

O: "It does me good knowing that I did it. I set myself a challenge, and I kept to it."

H: "You need to be rebellious, because otherwise, you accept the system as it is, you need a lot of strength when facing students, too. Innovation is challenging."

H: "You have to believe in the students and believe that you have the power to affect the students, to make them believe in your vision."

C: "I can attest about myself, honestly and for an immodest moment, that I am an excellent teacher at frontal teaching, the students love me, I am funny, I introduce values, and I too just realized that this is what are they needed."

I: "I am an unusual character, offbeat, different. It is difficult to be an unusual character."



*The innovative teacher is charismatic and people follow them.*

C: "In the first year, joining the project was voluntary; there were people who wanted very much to take part and those who went after this year. It is quite clear now that if you want to stay a significant teacher in the school, you must get on the bandwagon (the project)"

*Energetic*

Innovative teachers attest that they are activists who initiate activities and initiate conversations with other people. They are very energetic, both when they discuss their initiatives and in general.

O: "I cannot sit still ... I am always doing something."

In answer to the question, "You do a lot of things, why do you do them all? O answers, O: "I do not like to stay in one place. I constantly need the next challenge."

*Social awareness*

The innovative teacher attests about herself that she learns from others and has a social awareness that sometimes motivates her into action.

O: "I like working collaboratively. So, I share my ideas with teachers, present them to the different departments, and explain that I do things in a certain way, and tell them, "Come on, you can do it too."

C: "It is essential to have an awareness of the need for change, to think outside the box, to have courage and to be constantly learning - from everyone: from colleagues, from students from experts. It's never over. In 5 years, we will be somewhere else."

In the John, Donahue & Kentle (1991) questionnaire, this theme received an average score of 3.2 (the standard deviation was 0.954, and Cronbach's internal confidence level was 0.703). From this, we learn that the degree of connectivity of innovative teachers to extraversion aspects is very generous and that this is a significant characteristic of them.

***The third theme: openness to new experiences***

*Flexibility*

From the in-depth interviews with the teachers, a great many characterizations of openness to experiences emerged. Innovative teachers describe themselves as having great mental flexibility with this being reflected in their work and in all areas of their lives.

O: "I'm constantly trying to raise new ideas and new ways of doing thing in the student council"

C: "We look for new approaches to every problem arising, using different tools, finding new and innovative ways of doing things, not just the standard solutions"

I: "The point is, that you can respond with enough flexibility to whatever situation arises, changing yourself in order to make a difference"

The innovative teachers describe themselves as having a lot of curiosity, and becoming bored quickly by routine, which means they often learn new things.



They describe themselves as continually learning and evolving according to areas of interest that change at different times in their lives.

O: "I am constantly looking for my next project."

Innovative teachers perceive themselves to have a high tolerance for uncertainty

O: "In this world, you are creative, more flexible, and less put off by mishaps."

***Multidisciplinary - interested in many varied topics***

*Quotes*

O: "We introduced a radio station into the school."

C: "I taught history part-time for two years, I developed an educational program, I tried to set up an after-school program but didn't raise enough money, I went to work abroad and then returned to the position of deputy head."

I: "I deal with education in general, not just musical education. I stopped teaching children music and how I deal with ICT ... My teaching certificate is for high schools, but I teach first grade."

Innovative teachers are creative people with a developed imagination and intelligence.

I: "Eight years ago I began a project called 'children building a museum'. There are many children's museums in the world, built by adults. In this project, instead of adults deciding what children should learn about, I did the opposite, and let the children decide."

The openness to experience component of the innovative teachers' personality was significantly weighted in the interviews and the quantitative data as reflected in the data collected using a questionnaire by John, Donahue & Kentle (1991).

The average score the teachers gave themselves was 4.141. The standard deviation was 0.871, and the intrinsic reliability of this component was 0.882.

***Theme four: Agreeableness***

The innovative teachers perceive themselves to be particularly sensitive to their surroundings and any form of distress. They are not stubborn and adapt to the changes taking place around them, making certain to collaborate with others. They express gratitude to those who help them, while also becoming very angry with those who get in their way. The innovative teachers admit that they do not necessarily have an easy temperament. They need to get their own way even though it is sometimes not acceptable to their peers or the school administration.

*Quotes*

H: "There was a lot of jealousy among the teachers. Not only did I not get the help I needed, I also had to fight and engage in politics that did not interest me at all because I was doing something innovative, and they were not."

*Modesty*

O: "In answer to your question, I don't know why they suggested I should be included in the study. Maybe they are aware of the little things I do in this little school in an isolated area."

### *Collaboration*

O: "For example, on the occasion of the celebrations of the 70th anniversary of the country, someone asked that I create a program for a parents' evening. I built a team. I wondered who would join? There were about ten teachers. I offered them my idea and recruited the team, and it was just amazing."

### *Trusting and putting faith in people*

I: "A student called me and told me in a few years' time I will be writing her a recommendation for MIT. I told her for sure (fifth-grade student). Half an hour later, I asked her: Why shouldn't we do it right now? Let's see what the requirements are so we can start getting reading and studying for it from now on."

This complexity of the innovative teachers' personality is also reflected in the quantitative data collected using a John, Donahue & Kentle (1991) questionnaire, Admittedly the average score the teachers gave themselves was 3.298 high. However, the standard deviation was 1.148, and the internal reliability of this component was low: 0.266.

This indicates a complexity that does not make it possible to determine with a high degree of certainty the characteristics of innovative teachers regarding their demeanor's pleasantness.

### ***The fifth and final theme examined is conscientiousness***

From the in-depth interviews, the teachers describe themselves as sometimes being impulsive, prioritizing the here and now, having fun with ideas, while at the same time perceiving themselves as people whom others tend to trust, whose principals think of them as serious, hard-working people with the capacity to learn things independently.

### *Connection to a greater idea*

H: "I think it's important to teach them common sense and to prepare them for real life. It's important to make them good citizens who are not constantly supported by society because they don't know how to do anything."

C: "I want to produce graduates who want to take responsibility and change society."

C: "Innovative teachers are teachers for whom education is in their souls ... they look for ways to influence students, for ways to help and guide them..."

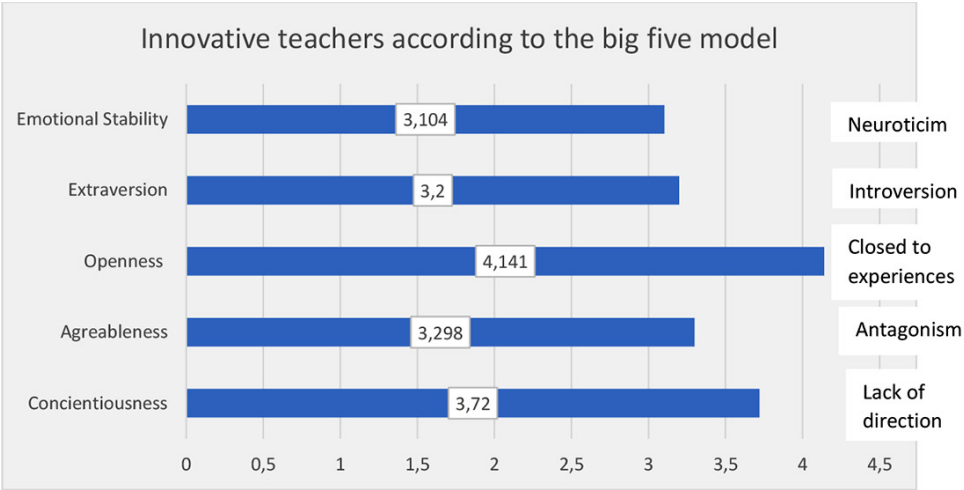
O: "I invest a lot of hours beyond what is required of us. There is a lot of pressure to finish things, to organize, to run after the teachers during breaks."

### *Persistence*

Looking at the "conscientiousness" theme of the innovative teachers' personalities as expressed from the data collected using John, Donahue & Kentle (1991) questionnaire, the average grade the teachers gave themselves was high, 3.720. The standard deviation was 0.816, and the internal reliability of this component was 0.704.

We calculated the mean, standard deviation, and internal reliability for each factor. The results are shown in the following table:

Component	Mean	Standard Deviation	Internal reliability
Emotional stability vs Neuroticism (N)	3.104	0.562	0.734
Extraversion vs Introversion (E)	3.200	0.954	0.703
Openness vs closedness new experiences (O)	4.141	0.871	0.882
Agreeableness vs Antagonism (A)	3.298	1.148	0.266
Conscientiousness vs lack of direction (C)	3.720	0.869	0.704



● n=30

Figure 1

**Discussion**

The 21<sup>st</sup> century has been characterized as being a time of uncertainty and rapid change, or a reality characterized by VUCA. This places certain demands on organizations, particularly in times of crisis. An organization that wants to move forward in these times, must show flexibility and be adaptable, implementing mechanisms of innovation. In schools, it is often innovative teachers who drive change, and therefore, in order for schools to be certain they employ teachers capable of making the desired difference, it is essential to characterize innovative teachers. This type of research, characterizing personnel who can promote change, has already become familiar from commercial, economic organizations. To promote processes of innovation in schools, teachers must be enabled. The OECD citation regarding the strength of the school is a function of the power of the teachers.

To promote innovative processes in the school, once innovative teachers in the organization are characterized, they should be given the best conditions in which to

operate. Sometimes innovative teachers must be recruited from outside and allowed to express themselves in the organization.

As part of this process the question arises, as to what are the characteristics that characterize innovative teachers? How can they be identified?

This article attempts to answer this question by characterizing innovative teachers according to the big five inventory personality model (NEO-AC) developed by Costa & McCrae (1992, 1987).

Having explored the self-perceptions of innovative teachers in the five components of the model NEO-AC, the components are discussed in order of those scoring highest on the scales from Emotional Stability to Neuroticism (N); Extraversion to Introversion (E); Openness to Closedness to new experiences ((O); Agreeableness to Antagonism (A) and Conscientiousness to lack of direction (C). The findings of this research show that the highest scores for self-perceptions of innovative teachers was for the (O) factor of the five big personality traits, with innovative teachers perceiving themselves as first and foremost *open to experiences*. They are curious people, with highly developed imaginations and a wide range of interests. Innovative teachers also may be unconventional, being capable of putting together plans and projects from several different disciplines. They may be regarded as non-conformists, who do not exactly blend in with the other members of staff in the school environment.

The innovative teachers also rated themselves as being highly conscientious, with the (C) factor of personality receiving the second highest score in self-perceptions of innovative teachers. Looking at the characteristics that defined innovative teachers, we also can see that these teachers are highly organized and methodological in working towards their projects. They try to think and plan every little detail in order for their projects to succeed as planned. They are also very efficient and sometimes do a lot of extra work at school.

It is interesting to observe that innovative teachers also perceived themselves as scoring highly on the (A) factor, describing themselves as being more sensitive to their surroundings, including the students, teachers and parents in the school community, than others. They often mentioned their tendency to see failings or injustices and trying to fix them. However, findings about the characteristic of *agreeableness*, are not conclusive. While the teachers state that they are pleasant and agreeable people, the findings indicate that they are sometimes lonely and perceived as being annoying by their peers. Innovative teachers are very demanding of themselves and of other people. They often show-off their work in order to encourage others to do the same. However, while their intentions may be good, others may not always respond positively to these initiatives.

While innovative teachers clearly perceive themselves as being extraverts, this factor only received the fourth highest score out of the five traits. Innovative teachers may be considered to be *extraverts*, and as a rule they feel that people like them. They are energetic to the point that they can't pause and enjoy what they have

already accomplished. They are always looking for the next thing to work on. They are very enthusiastic about their projects and basically are outgoing people.

The final component of the model is *emotional stability*. Innovative teachers displayed characteristics of great optimism in the way they see the world and their ability to succeed in projects they initiated. They deeply believe that they can change the world for their students. They are highly committed and deeply conscientious. Sometimes they present themselves as challenging the existing rules and the accepted assumptions in the school, rather than quietly carrying out their role in the classroom.

The findings show that innovative teachers are people that are open to new experience – with great mental flexibility, capable of taking risks, and tolerant of elements of uncertainty as are sometimes expressed in various cases of schools and life in the 21st century. These teachers also find that they are interested in people and get bored quickly and therefore look for thrills and intellectual interest in the innovations they initiate.

It is important to note that their *emotional stability* is expressed in a critical perspective that challenges existing rules, alongside aspects of optimism or even naivety, which allows them the ability to conceive ideas that sometimes seem impossible to put into practice. This may provoke antagonism in their environment from their peers and even occasionally from the school administration. However, the ability of innovative teachers to work independently without the support of others, also allows them to implement their impulsive ideas.

In many cases, the personality trait defined as conscientiousness in the NEO-AC model describes the innovative teachers well (thoroughness, self-learning ability and diligence) combined with qualities of sociability, assertiveness, active enthusiasm and ambition (extroversion) combined with pleasant demeanour, sensitivity to the environment, flexibility and gratitude to those who help them. These characteristics may enable innovative teachers persuade others to join them in their projects. Sometimes, however, these traits alone do not ensure co-operation of others, and they may be forced to work alone. Innovative teachers tend to be inwardly driven, not waiting for others to suggest new ideas. These teachers identify elements of unease in their surroundings and are able to lead innovative processes by themselves, yet they usually prefer to do so together with other factions within the school.

In conclusion, it appears that the trait most associated with innovation is openness to new experiences, whereas self-control is a negative predictor of innovation. The effect of the other components may depend on the circumstances.\

## NOTES

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