COMPARING ITALIAN PRE-SERVICE AND IN-SERVICE TEACHERS' BELIEFS ON COMPETENCE BASED LEARNING

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ABSTRACT: This research highlights pre-service and in-service teachers' beliefs on competence- based learning: Teachers who want to facilitate the acquisition, development and strengthening of competencies in their students. From an assessment perspective, such a competence-based approach implies providing students with authentic learning situations related to real life. At the same time evaluation needs to switch from quantitative and standardized tests to formative moments in which students become aware of their learning weaknesses and understand how to cooperate and use resources in order to make the most out of their learning process. The research is based on a 15-item questionnaire that was completed by 442 pre-service and in-service teachers attending a compulsory annual training course. The questionnaire's main themes are related to competencies, learning objectives, study contents, teacher-student relation, and technologies. The questionnaire, administered online during the month of April 2015 in two different Italian universities, reports as main results a statistical difference between pre service and in service teachers about the perceived importance of competencies in their teaching practice.

This paper describes the beliefs of a group of Italian teachers on the construct of competence, and on the teaching and learning practices based on this construct. The first part of the paper describes recent developments and theoretical issues addressing the competence construct in Europe, and then it focuses on related approaches to learning and teaching. These approaches highlight a focus on competence development as effective teaching practices. The second part describes an empirical study based on a survey research design. The study investigates the opinions and attitudes of pre-service and in-service teachers on issues that characterize the competence approach to teaching. The study also had the function to raise teachers' awareness on these issues while they attend training courses enhancing competence- based teaching methods in relation to the educational challenges of 21st century.

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In its recommendations related to key competencies for lifelong learning (2006) the European Parliament states that everybody needs to acquire the tools to develop the basic skills to prepare for adult life. These key competencies form the basis for further learning and are those needed for self-realization, personal development, active participation in democratic life, social inclusion, and employment. In 2008 the European Union document *New skills for new jobs: Better matching and anticipating labour market needs* identifies the skills named "transversal" because they are useful to all types of work and at all levels of employment. The "transversal" competencies are related to communication, problem solving and analytical thinking, and are necessary to perform different kinds of work. Education and vocational training must respond firmly to the needs of developing these skills because they characterize the 21st century work environment (Batini, 2013).

The competence construct can be found in many educational debates and it is the protagonist of an immense body of literature, although its definition can still be very complex (O'Sullivan & Bruce, 2014). A possible definition refers to behaviors that require the knowledge of the person and that can be implemented only through a right mix of knowledge, skills, and personal characteristics. The competence construct seems to represent an interface between different areas of learning; it is centered on the person; it allows the comparison of different ways, scopes, and pace of learning, allowing mutual acknowledgement of different national certifications (Batini, 2013). The European Qualification Framework (EQF) and the European e-Competence Framework (e-CF) have very similar definitions concerning the competence construct. Both recognize knowledge, skills, and attitudes as constituents of a competence and both define these concepts (Ravotto, 2011 pp.14-15):

- Knowledge refers to facts, principles, and theories … the "what" of learning. It is important to recognize the importance of knowledge, the cognitive dimension of learning, as fundamental for personal development although increasingly replaced by other learning dimensions such as emotional or social awareness (Calvani, 2011 as cited in Ravotto, 2011).
- Skills are defined as the "how" of the learning. They are the abilities to apply knowledge and complete the required tasks. Skills and knowledge are interconnected because knowledge gives rise to skills and skills can lead to the acquisition of new knowledge.
- Attitudes are the glue that holds together knowledge and skills. These can be explained as the ability to maintain, interpret, extrapolate, analyze links, synthesize and evaluate. Autonomy, responsibility, orientation to results, awareness, flexibility, self-orientation, ability to pose and solve problems are just some of the examples proposed by the two frameworks.

Competence-based education and its related approaches to teaching and learning prefer to "focus on outcomes (what a student knows and can do) than on inputs (how students learn, where they learn, or how long they take)" (O'Sullivan & Bruce, 2014, p. 39). Competence-based approaches consider the engagement of the learners in the acquisition

of knowledge, skills and attitudes, and the use of teaching and learning strategies that facilitate the development and the demonstration of the acquired skills. These approaches have to include a clear definition of learning objectives, expected results and to provide attention to the learning styles and the needs of learners. These approaches should provide the time needed to acquire and to demonstrate the expected competencies and be able to create an environment conducive for learning (O'Sullivan & Bruce, 2014).

An important feature of competence-based education is the different function of assessment which recognizes success in learning throughout the completion of tasks and the authentic demonstration of skills. Learners have to show the acquisition of required knowledge and skills by implementing projects, by writing reports or by using concrete evidences other than a multiple-choice test (Ordonez, 2014).

Competence-based teaching requires a shared responsibility between teacher and learners, in achieving the expected results. It emphasizes the role of teacher, methods and expectations that contribute to student success.

Competence-based learning is a way to structure learning activities and to give the learner the opportunity to experience a specific set of knowledge. Learners do not simply observe and listen. They also need to experiment and to demonstrate gained expertise. The main attributes of these approaches are shown below in Table 1:

Table 1

The Main Attributes of Competence-Based Teaching and Competence-Based Learning,
Note: Adapted from O'Sullivan & Bruce, 2014

Competence-Based Teaching	Competence-Based Learning
Understanding how learners learn	Understand how one learns best (style)
Matching principles of learning and teaching	Understand exactly what is expected outcome(s) of learning
Facilitating not controlling learning	Take responsibility for one's learning
Modelling humility, critical thinking, respect, competence and caring	Motivated to learn – goal oriented
Supporting acquisition of knowledge, skills & professional behaviours in all learning domains	Ethical person and practitioner
Promote and expect learner accountability for learning	Critical thinker
Provide timely, specific feedback on learner progress beginning with learner self-assessment	Self-assess learning and performance
Individualize learning experiences according to needs	Commitment to ongoing learning
Expect increasing complexity of performance as the learner progresses throughout the programme	

In relation to teachers that attend a training course, it is important for trainers to understand the beliefs of in-service and pre-service teachers about the competence-based

approach to teaching and learning, and how these opinions vary depending on previous work experience. While acting as teacher trainers we formulated four research questions:

1. What are the opinions of the interviewed teachers about the concept of competence?
2. What are the teaching experiences of the interviewed teachers related to a competence-based approach?
3. How do the opinions of interviewed teachers vary depending on their in-service and pre-service teacher experience?
4. How do the opinions of interviewed teachers vary depending on their career length?

Method

Survey research designs are procedures that differ from experimental designs as they do not involve a specific treatment realized on participants by researchers. In this procedure, researchers do not manipulate variables and it is not possible to explain cause-effect relationships as in experimental studies (Creswell, 2008). Survey research designs describe trends in data and for this reason it is similar to correlational design. Its main objective is "learning about a population and less on relating variables or predicting outcomes" (Creswell, 2008, p. 388). This survey research adopts a cross-sectional design because it "collects data at one point in the time" (Creswell, 2008, p. 389) affording the possibility to understand attitudes, beliefs, opinions, or practices in use.

Participants

The study involved 442 teachers (F = 72% M = 26%). The age of the sample ranged from 23 to 66 with an average of 41. In-service teachers declared to have an average of 11 years of teaching. Pre-service teachers are 70 (19 %). Among the 442 participants 9% declare to teach in nursery schools, 20% in primary school, 53% in lower and upper secondary school, 3% as educator of learners with disabilities, and 1% teach in private schools. As participants attended training course at the University of Padua and at the University of Perugia, the majority of them came from the north-east and the center of Italy.

Procedure and Instrument

Each participant participated in blended learning and had the possibility to access the questionnaire through a link posted in the online course (Moodle) platform. Authors used on online tool to build the questionnaire.

The first section of the questionnaire collects socio-demographic information concerning the participants such as age, gender, career length, level of school in which they teach, and the area of residence. The second section includes a first multiple choice question and 14 items belonging to four core themes (see Table 2).
The perceived importance of teaching contents respect to competencies is the first core theme and it includes five items with a five level Likert scale (1 = strongly disagree 5 = strongly agree). The perceived importance of learning objectives, the second core theme, includes two items with a five level Likert scale (1 = strongly disagree 5 = strongly agree) and an open-ended question.

The perceived importance of student-centeredness, the third core theme, includes three items to be assessed according to a five level Likert scale (1 = strongly disagree 5 = strongly agree). The perceived importance of authentic tasks, the last core theme, includes a first question with an ordinal scale of four levels (1 = never 4 = always), a second multiple choice question, and a third open-ended question.

Data Analysis

The percentage of participants' responses to the first multiple choice question was calculated in order to understand the most shared definition of competence. Then a

Table 2
The Thematic Core and the Relative Items, in the Questionnaire Created by the Authors.

Perceived importance of teaching contents in respect to competencies.	• It is appropriate to give greater importance to the disciplines and to the teaching contents. • It is urgent to reduce the importance of the lectures and promote a competence-based education. • It is appropriate to decrease the importance of the relationship with students and give more importance to the teaching contents. • Learners must acquire contents and notions not competencies. • Teachers and contents need to be at the center of education.
Perceived importance of learning objectives	• It is important to teach starting from learning objectives. • Learners and learning objectives need to be at the center of education. • Could you summarize in few words a didactic action with a learning objective?
Perceived importance of students-centeredness	• Teaching is based on relationship with students. • It is important to understand how students learn, what their problems are, and to adapt teaching behaviors to learners' characteristics. • It is possible to entrust an important assignment to a learner if

	the teacher need it.
Perceived importance of authentic tasks	• Do you normally use activities during the lesson? • Do you normally assign authentic tasks during the lesson? • Could you provide an example of an authentic task assigned recently?

factorial analysis was conducted to confirm the possibility of clustering the items in the first three core themes (perceived importance of teaching contents in relation to competencies, perceived importance of learning objectives, perceived importance of students-centeredness). In addition, the difference between the means of the scores expressed by the participants was also calculated. To understand the differences between different classes of participants grouped by career length, a one way ANOVA was used as the independent variable, distinguishing participants in 9 groups (see Table 3) and the dependent variable, the three dimensions of the questionnaire, is continuous. To understand the differences between pre-service and in-service teachers, a t-test was used as the independent variable, distinguishing the participants into two groups (see Table 4) and the dependent variable, also in this case the dimensions of the questionnaire, is continuous.

The second dimension, related to learning objectives, presents an open ended question that asked participants to describe a didactic action with a learning objective. For this question the frequency of the most used words was calculated and some of the most interesting examples were selected.

Table 3

Descriptive Statistics of Participants Grouped by Career Length

Career length (in years)	N	Mean	Standard deviation
0	70	1,88	,570
1-5	93	2,12	,677
6-10	57	2,10	,586
11-15	34	2,10	,491
16-20	30	2,39	,750
21-25	30	2,18	,734
26-30	16	2,24	,807
31-35	16	2,29	,628
36-40	15	2,51	,728
41-45	2	2,80	,283
Total	363	2,13	,658

Table 4

Descriptive Statistics of Participants Grouped as Preservice and In-Service Teachers

Groups	N	Mean	Standard deviation
Preservice	70	1,88	,570
In-service	293	2,19	,665

Finally, to understand the fourth thematic core (perceived importance of authentic tasks) the response rates for the first two questions were calculated. Again the most significant examples reported by the participants (in relation to the third question) were selected.

Results

The first item of the questionnaire is a multiple choice question that asked participants to choose the definition that fit better with their own idea of competence. The most shared definition (64% N= 283) is that of competence as the ability to use a structured set of knowledge and skills, during work, study or in professional and personal development. The following are the other less shared definitions of competence: the ability to act and to react autonomously in complex situations (24% N=105), the knowledge to develop an ability (2% N = 9), a mix of knowledge and skills (2% N = 8), a mix of knowledge, skills and personal characteristics (8% N = 37).

The authors conducted a factorial analysis using items to be assessed on a five levels Likert scale identifying three main dimensions. These dimensions explain 50.8% of the variance (see Figure 1).
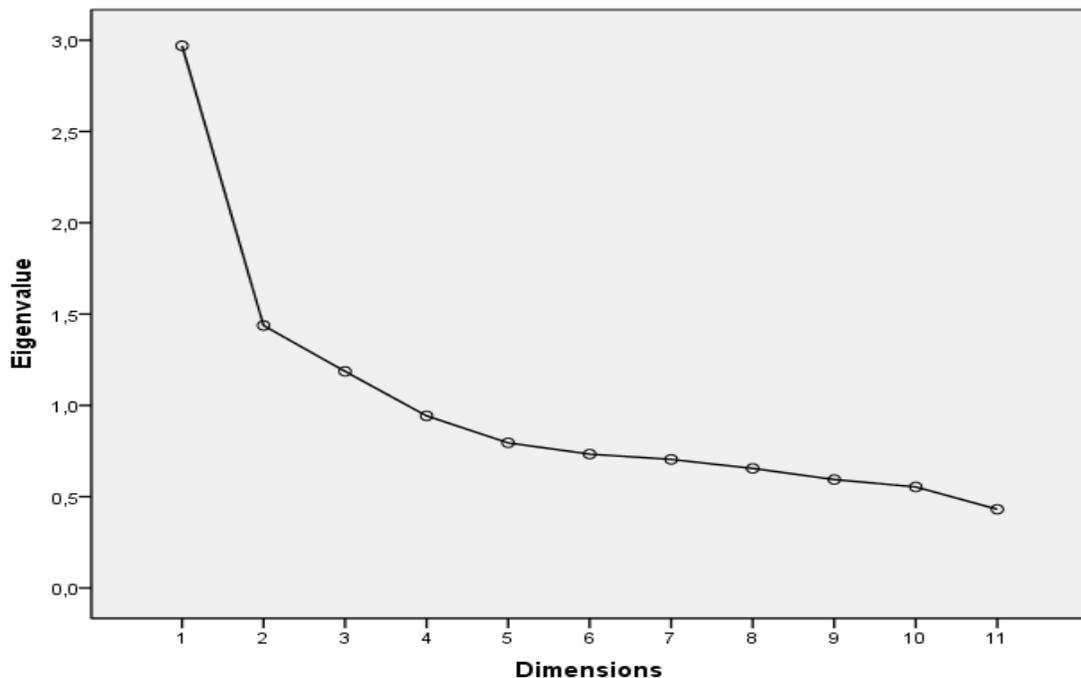

Figure 1. Graphic representation of the main dimensions in the questionnaire

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Reading and interpreting the most saturating items, it is possible to group them confirming the existence of the three core themes established by the authors:

- Perceived importance of teaching contents in relation to competencies.
- Perceived importance of learning objectives
- Perceived importance of student-centeredness

For each of the three dimensions listed above, the differences in participants' expressed scores were explored, taking into account the career length and the state of service. Only for the first dimension, was a significant statistical difference in the mean of scores identified. The following null hypothesis to test the scores with a one way ANOVA and a t-test was formulated:

H0: There is not a statistically significant difference in the mean of scores related to the perceived importance of teaching contents in relation to competencies on the basis of career length.

Results of the one way ANOVA allows us to reject the null hypothesis and to accept the hypothesis that there is a significant difference in the perceived importance of competence in relation to teaching contents between groups of participants with different seniority $F (9, 353) = 2.7$, $p = .005$. The importance given to competencies is greater for the group of participants with no years of service, especially compared to the groups of participants with 11-15 and 31-35 years of service (see Figure 2).

Thus a second hypothesis was formulated in order to understand whether pre-service and in-service teachers had different beliefs related to the importance of competencies.

H0: There is no significant difference in the mean of scores related to the perceived importance of teaching contents in relation to competencies for pre-service and in-service teachers.

The t-test shows that there is a significant difference between the two groups allowing us to reject the null hypothesis $t (361) = -3.5$ $p = .0$
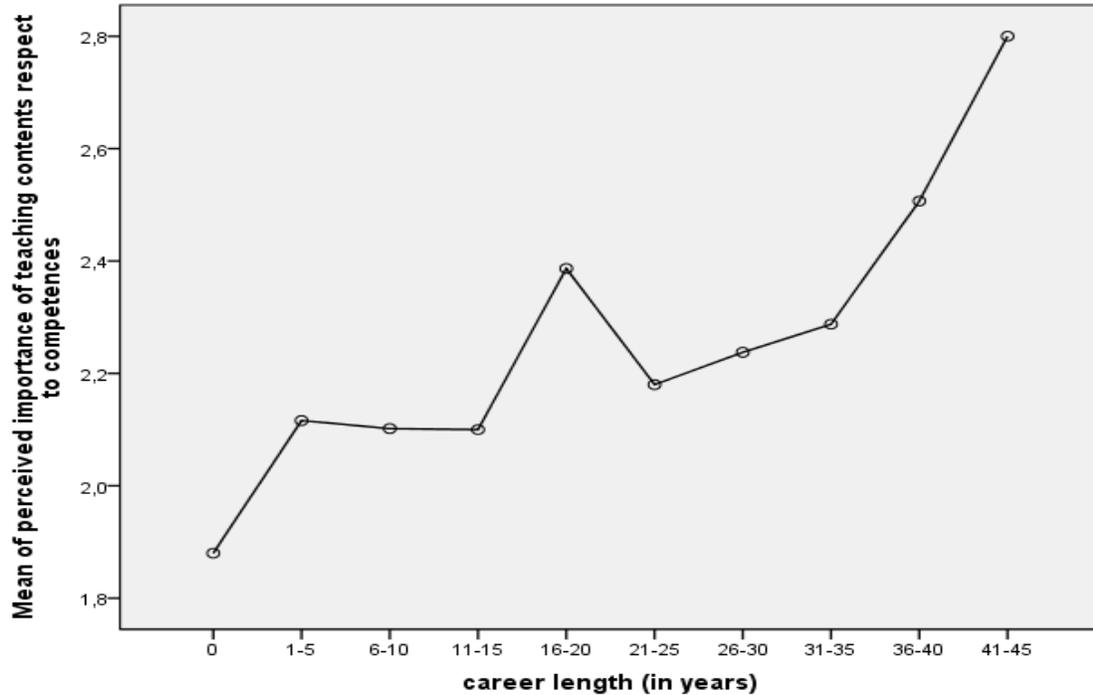
Figure 2. Graphic representation of the statistical difference between the groups for the dimension of perceived importance of teaching contents with respect to competencies

An open-ended question was formulated to integrate the second dimension "perceived importance of learning objectives," asking participants to summarize in a few words a didactic action with a learning objective. The frequency of the most used words was calculated (see Table 5).

Table 5

Frequency of the Words used to Summarize a Didactic Action with an Objective

Words	Frequency
Objective	336
Dydactic	297
Action	318
Text	277
To know	259
Activity	241
Student	226
Capacity	212
Reading	199
Kids	187
Knowledge	177
Group	167
To understand	158
Learning	150

Participants reported various and significant examples of didactic actions realized during their courses (see Table 6). The most representatives were chosen according to qualitative content analysis (Mayring, 2000).

Table 6

Examples of Didactic Actions Reported in the Questionnaire

Learning objective	Didactic action
Learn to listen, repeat and elaborate a melodic idea.	Improvisation on a scale of five sounds on a distinct tone, a student listens from another student a short melody, repeats and elaborates it, then it is the turn of another student.
Learn to orient consciously and detect morphological, economic and artistic characteristics of a place. Experiment methodological, linguistic, social and civic skills.	produce a power point to describe a city, using images and maps.
Learn the concept of fraction.	Splitting up a chocolate bar, distribute a part to each student, and transfer experience in mathematical terms.

As previously reported, a fourth core theme named "perceived importance of authentic tasks" was addressed on the basis of three questions. Participants could respond to a first multiple choice question, to a second question with a four level ordinal scale (1 = never 4 = always) and to a third open-ended question. Table 7 presents the percentage of responses for the first two questions.

Table 7

Percentage of Responses to the First Two Questions Related to Perceived Importance of Authentic Tasks

Do you normally use activities during the lesson?	N	%	Do you normally assign authentic tasks during the lesson?	N	%
Never	90	20%	At the beginning of each module	67	15%
Sometime	152	34%	During each lesson, I believe that without activation students cannot learn	238	56%
Often	156	35%	Never	23	5%
Always	44	10%	Occasionaly	89	20%
			Usually I explain, discuss and then have oral exams	25	5%

In the last open ended question participants could mention an example of an authentic task (Herrington, Parker, & Boase-Jelinek, 2014) used in their class. Table 8 provides examples that qualitative content analysis indicated as the most interesting.

Table 8

Examples of Authentic Task Reported in the Questionnaire

Starting from students' inadequate behaviors in class, they analyzed the causes and consequences. They discussed the themes of friendship and respect for the diversity, pupils found through different types of texts (poetic, narrative, etc.) ideas that led them to identify some possible solutions to the problem. They verbalized their assumptions, their personal thesis and compared them with those of others.
Project: create a radio jingle for a product. Realize melody and text. Target: young people Duration of the jingle: 10-15 seconds Resources: music instruments, papers, pencils, erasers, journals to choose an example of product, the internet Deadline: one week
In order to help their parents in preparing something different for lunch, I assigned to students, attending the second year of an upper secondary school, a research assignment on nutrition during the middle ages. Students chose an afternoon to prepare, with the help of their parents, typical dishes.

Discussion and Conclusion

It was possible to gather Italian pre-service and in-service teachers' most shared definition of competence through an on-line questionnaire. The questionnaire was also instrumental in collecting information about teaching experiences related to the competence-based approach, and to identify some differences in relation to teachers' beliefs.

Factorial analysis confirms the selected core questionnaire themes. This analysis confirms the existence of the three investigated dimensions: the importance that participants attribute to teaching content in relation to competencies, the importance attributed to learning objectives as starting point for competence-based learning, and the emphasis on the students' role as key factors in implementing competence- based education. In addition to these three dimensions, a fourth core theme is emerging. This theme relates to the use of authentic tasks and to activities that distinguish a competence-based approach from a traditional one.

In relation to the first research question the majority of participants define competence as the ability to use a structured set of knowledge and skills, during work, study or in professional and personal development. This definition is quite consistent with the definition provided by the European Union as both identify the concepts of knowledge and skills as important elements of competence and as related to the learners' personal

and professional sphere. In terms of further research, it would be interesting to understand how the choice of such definition varies depending on teachers' career length.

The second research question addresses teachers' experiences in relation to the use of learning objectives and authentic tasks. Teachers report a range of creative examples, although only 10% of teachers state that they always use this active teaching approach. Only 56% of teachers say that they always use authentic tasks during their lessons. These results indicate an inconsistency in relation to teachers' understanding of formal education methods and teachers' practices. When combining the responses to the first and to the second research questions, it seems that the dominant European Union discourse concerning competence-based teaching has been adopted in principle by the majority of this Italian sample of teachers. On the contrary, the teaching practice of these teachers has remained relatively unaffected by the competence -based approach with only half of them focusing on authentic tasks and only one out of ten actually adopting an active teaching approach as their regular educational approach.

The gap between the EU discourse and the teachers' practice enhances the importance of the answers to the third and the fourth research questions that aim at investigating possible differences of teachers' beliefs. While it is not possible to confirm significant differences in the dimensions related to the importance of learning objectives and to the centeredness of learners, it is possible to say that the perceived importance of the competencies in relation to the teaching contents is higher in pre-service teachers when compared to teachers who already have a longer career. This difference shows that the greater the experience of teachers, the less they tend to accept changes introduced to improve teaching practice. On the contrary, pre-service teachers and those in the early years of their career are more influenced by the initial training (Batini & Surian, 2015).

Overall, the questionnaire seems to function as an interesting instrument to understand teachers' beliefs about competence- based approach to education and related educational choices to match learners' salient features. During blended learning courses, discussing the results with the participants can motivate them to a better understanding of competence-based education and of its practical implication in terms of teaching methods. During face-to-face feedback, teachers who were participating in the Padova and Perugia blended learning courses expressed their various difficulties in relation to the possibility to change their way of teaching within a school system which is still dominated by traditional ways of lecturing and oral exams. In relation to these features of the Italian school system such combination of quantitative and qualitative data gathering during teacher training courses, indicates positive results in order to raise teachers' awareness about innovative instructional practices, especially with future generations of teachers.

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